

AN INTEREST RATE COMMISSION AGENT BANKING SYSTEM

by

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DECLARATION

I, Ameha Tefera Tessema, declare that this doctoral thesis entitled an interest rate commission agent banking system is my own work. Since the thesis is article based, each sources used in the articles as well as the thesis properly cited by relevant references and each portion of the thesis published by me and my advisor prof. J.W. kruger as co-author, in indexed journals and conferences with the following title

1. An interest rate commission agent banking system(the theory part of the thesis)

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I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

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ABBREVIATIONS

AD	Average deposit
AIRCABS	An interest rate commission agent banking system
AVDR	Average deposit interest rate
CD	Core deposit
CRLC	Credit risk and liquidity crunch
CV	Coefficient of variation
D	Deposit
DIIR	Deposit interest incentive rate
DIPC	Deposit interest incentive payment capacity
DMDI	Discrete market deposit interest rate
EDUR	Efficiency of deposit utilization ratio
EFR	Bank's Efficiency ratio
GPDI	Growth private domestic investment
GPS	Growth profitability and sustainability of AIRCABS
ILF	Investor loan funding
L	Loan and advance
LA	Liquid asset
LLP	Loan loss provision
N	Normal market interest rate
NIE	Non-interest expense
NII	Total non-interest income
NIN	Non interest income growth
NIR	Net interest rate
P	Price
Popn	Total population
Q	Questionnaire
ROC	Return on capital
SD	Stable deposit
SPDR	Special deposit ratio

TBD	Total bank deposit
TD	Total deposit
TL	Total loan
TS	Total Domestic saving

ACRONYMS

CA	Capital adequacy
DF	Degree of freedom
GDP	Gross domestic product
GNI	Gross national income
M2	Broad money
NPLS	Non-performing asset
ROA	Return on asset
ROE	Return on equity

ABSTRACT

An interest rate commission agent banking business model was developed. It is defined as a system adopted by the bank to be an agent for investors' loan funding to entrepreneurs getting the fund seller and buyer agreement to administer the loan after disbursement by retaining a reasonable interest rate commission from the agreed investors' loan funding credit price. The research sought to investigate the effect of investor loan funding, credit risk and liquidity crunch, on AIRCABS sustainability and profitability. To test the viability of an interest rate commission agent banking system the researcher collected primary data using structured survey questionnaires from a sample population of 300 bank's professionals and secondary data using twenty three years' financial statements, which were published in the period from 1 July 1993 to June 2016, of one government bank and 15 private commercial banks in Ethiopia. To test the research hypotheses, coefficient of variation, canonical correlation and multinomial logistic regression statistical tools were employed and to analyze the survey questionnaires the Cronbach alpha, kuder-Richardson, coefficient of variation and factor analysis were used. The statistical results showed that AIRCABS was not affected by credit risk and the liquidity crunch and the increase of investor loan funding increased AIRCABS' sustainability and profitability. Calculating the discrete market deposit interest incentive taking into account the depositor who later shifted to an investor position to get a proportionate credit price instead of a deposit interest rate on the fund already invested by the bank which later shifted to an agent position found increasing stability of money deposited by depositors.

Key words: investor loan funding, discrete market deposit interest rate, agent bank model, profitability and sustainability, stable deposit

CHAPTER 1: INTRODUCING AN INTEREST RATE COMMISSION AGENT BANKING SYSTEM (AIRCABS)

1.1. INTRODUCTION

The banking sector relates to all sectors in the economy and strengthening the banking system in a country would lead to developing the economy. If this is not done, a banking crisis can affect the economy as a whole. Since all sectors pass through the banking service to reach their financial target, the banking crisis, which arose from the credit crunch, affected all sectors in the financial system. The banks' toxic asset was the major source of the financial crisis created by a credit crunch that led the bank to stop lending and later retarded the economy.

The major profit line of non-traditional banks is income from non-interest trading activities. Banks in the United States of America (USA) that had a high income share from non-traditional activities such as investment banking and asset securitisation formed the base of the USA's financial crisis in the period 2007/2008 (De Young & Torna, 2013). The financial crisis arose because the USA affected the living standard of underdeveloped countries and this led to higher levels of global poverty (Gallagher & Wilkins, 2012). Though banks preferred to shift into non-traditional banking activities such as investment banking, the financial crisis that emanated from the USA in 2007/2008 revealed the weakness of investment banking and other banks' business models (Köhler, 2014; Lusignani & Onado, 2014). The reason why the financial crisis spread speedily from the USA throughout the world was that the international financial governance structure lacked the appropriate tools and mechanisms to halt the situation (Marquez, 2010). Because the banks had not adopted a business model by which they could transfer credit risk to individual investors, entrepreneurs and non-banking institutions without holding customer deposit as their own asset, the models adopted by banks were a catalyst for a financial crisis. The banks' interest proceeds from selling of funds were unfair and did not maintain the fair mutual benefit of depositors and the bank.

Traditional banks advanced funds to customers by more than double the deposit interest rate to get higher earning excess above the deposit cost. However, using the customers' deposits as their own asset on the banks' balance sheet exposed banks to credit risk and liquidity crunch (CRLC), which can be considered the source of the financial crisis. To protect the banking business from credit risk and liquidity crunch, banks had to shift their credit and liquidity risks to

non-banking institutions or individual investors and entrepreneurs. This can be done by applying AIRCABS, which is a system adopted by the bank and involves being an agent for investor loan funding to entrepreneurs having the fund seller and buyer agreement to administer the loan after disbursement by collecting an agreed commission from the investor loan funding credit price. A loan transaction that goes through AIRCABS liberalises investors and entrepreneurs. Because of this, the agent bank is exempted from paying the financial expense into the customer deposit. Since the agent bank has administered the loan after disbursement in an authentic manner, no moral hazard is expected among investors, entrepreneurs and the agent bank. Administering services selling and investor loan funding by an interest rate commission agent bank helps to mobilise continual stable deposits in the bank.

The major contributing factor that changed stable deposits into volatiles in traditional banks is the stiff competition among banks regarding service excellence. Since the traditional bank's profit source is customer deposits, the increase in money withdrawals from customer deposits led to a liquidity drain and increased defaulted loan by customers, which increased the bank's non-performing asset. The main contributors to the banks' credit risk were borrowers' poor knowledge of loan administration, weak credit assessment, weak bank follow up, external factors such as unexpected burden of tax on the borrower's business and commodity price shock. However, AIRCABS shifted credit risk and liquidity crunch to investors and entrepreneurs and mobilised loan and deposit simultaneously.

There is a misconception that loan attracts deposit mobilisation. As a bank advanced loans, the number of customers who sought a loan to deposit their money at this bank increased. This could be when the bank is able to mobilise stable deposit from customers who do not need funds immediately. The bank no longer uses the deposits of customers who need funds to convert their deposit into loan disbursement. In order to increase the volume of loans, the bank should manage loans and deposits in a compatible manner in order to get a reasonable profit from the sale of the deposit funds (Davydenko, 2010). Over-leveraging and under-performing loans have the potential to render saving and loans vulnerable to financial shocks, thus contributing to financial instability (Doyran, 2013).

However, AIRCABS administers investor funds based on the lending strategies, such as 360 degrees, 180 degrees and 90 degrees, to collect interest rate commission and fee from

investors. Since the loan after disbursement follows the agent bank administration, the likelihood of the loan becoming a non-performing asset is less than the likelihood that the loan will default without using an interest rate commission agent bank.

The high-level Expert Group chaired by Liikanen in Brussels on 2 October 2012, published a final report to establish a separate legal entity, which runs its business by taking deposits from society and providing a financial service, which is connected with less-risk trading activities, to the non-financial sector in the economy (Köhler, 2014). However, this newly proposed separate bank was not clear of credit risk and liquidity crunch. Customers' deposits were considered as the bank's own asset while the bank received the proceeds from the sale of the deposits. Unless a bank transfers its credit and liquidity risks per se to a non-financial institution, investor and entrepreneur without considering customer deposits as its own asset changing the model that made the bank absorb risk would put in question the bank's sustainability in the market. However, implementing one of the strategies, which is a 90-degrees lending strategy of an interest rate commission agent bank enabled working with traditional banking activities to enhance stable deposit mobilisation by creating alternative investment opportunities for depositors.

1.2. THE NEED FOR AIRCABS

As competition among banks in traditional banking activities increased, depositors' dependency on bank service benefits also increased. In turn, this resulted in deposit instability. However, AIRCABS helped to ensure sufficient continuous deposits by applying progressive interest rates incentives, beyond the market rate, for specific accounts where deposit volumes increased from time to time. This later enabled the depositor to benefit from proportional credit price in terms of deposit interest rate and thereby the bank became an agent for the depositor of the fund already made available by the bank to borrowers.

Implementing AIRCABS model enables banks to determine interest rates on loans based on the interaction of demand and supply in the market. Therefore, the society is not prevented from borrowing, lending and depositing funds and getting a fair interest from banks.

Since the deposit mobilisation and lending strategies adopted by traditional banks were the same, the banking system was not able to attract unbanked people and this led to an increase

in the informal financial market by more than 50% of GDP, especially in developing countries (Ogbuabor & Malaolu, 2013).

Traditional banks hold customers' funds as their own assets; even though holding customers' funds as own asset on the balance sheet exposed banks to credit, liquidity and interest rate risks. The current deposit mobilisation strategies through deposit product promotion that focused on spot lottery in terms of interest rates made deposit mobilisation seasonal (Venkatesan, 2012; Ngouhouo & Mouchili, 2014). However, an interest rate commission agent banking system has mutual benefits for investors, entrepreneurs and the agent bank. Although, it is costly to advertise banking products in order to motivate society to enter into the banking system, the bank collects deposits through the high cost of advertisement to have funds to disburse loans to entrepreneurs.

Fund holders/depositors who wish to collect credit price from idle cash at the bank did not have an option of lending funds to entrepreneurs with the bank as an investor agent. When an entrepreneur presented a loan request to the bank, no rule existed for the fund holder (investor) to lend his/her funds to the entrepreneur using the bank as an agent for the investor to administer the loan after disbursement.

In traditional banking, it is possible to grant loans to borrowers against the pledged property value without proper consideration of the borrower's capacity to repay the loan obligation. Once business loans are disbursed to borrowers, banks frequently charge borrowers higher interest rates and fees. The banker could even deceive borrowers by concealing the true nature of loan terms, making them more vulnerable to abusive practices. Predatory lending practices that hamper investment by charging borrowers billions of dollars per year have not yet validly been solved (Ament, 2009). Therefore, people prefer to borrow from informal lenders whose source of money is illegitimate. This also increases the circulation of currency in money laundering activities.

Trade-based money laundering, which is dangerous because it increases crime in the community, has not yet been regulated and monitored internationally (Chhina, 2014). However, under AIRCABS, the entrepreneur and investor know each other or at least the bank knows one of them. It would therefore be easy for the agent bank to enhance the 'know-your-customer' principle to avoid trade-based money laundering and terrorism financing. Since the loan process

is based on investor loan funding and run by the agent bank, which follows governing bank rules and regulations, the relationship among investor, entrepreneur and the bank makes the loan process assessment prudent. Therefore, the bank has no loophole to practise any predatory lending behaviour since the fund provider follows every step.

Informal firms in developing countries account for 50% of economic activities. Entrepreneurs in this sector were not profitable; the firms were very small, unproductive and stagnant. People in the informal economy live in a hand-to-mouth economy; even though huge amounts of money circulate outside the banking sector impeding the bank from money lending to finance investment in the formal economy (Porta & Shleifer, 2014). For instance, the money circulated in the informal sectors of Nigeria accounts that a unit increase in the size of the informal sector results in 7.44% deterioration in the level of liquidity at money depository banks (Ogbuabor, Malaolu & Mba, 2013). Money circulating in the informal economy lagged the general level of investment; and it was also a great challenge for governments to formalise the informal economy. Debtors and creditors in AIRCABS were from the informal and formal economy. Since investors and entrepreneurs were the principal promoters of the agent bank in society, the informality in the economic sector was expected to be minimised.

1.3. BACKGROUND TO THE STUDY

Banks have a relationship with all sectors of the economy. A country's economy can be developed by strengthening banking systems. The financial crisis emanating from bank runs, bad debt, asset-liability mismatch, excessive leverage and sovereign default affected the entire economy. Since all sectors used banking services to reach their financial targets, the banking crisis, which arose from credit risk and liquidity crunch, affected all sectors in the financial system. A credit crunch prevents the bank from lending, which slows down the economy. Since sub-Saharan Africa is less integrated into global markets, global financial crisis affected the living standards of people in such countries and are expected to increase global poverty (Gallagher & Wilkins, 2012). By managing credit, liquidity and interest rate risks, banks increased their competitive advantage. This, in turn, increased their shareholder value and safeguarded them against counterparty risk (Mačerinskienė, Ivaškevičiūtė & Railienė, 2014). By managing risk, banks reduced their exposure to the uncertainty of the borrower's project failures. Uncertainty about the business project outcomes of borrowers led to uncertainty about loan repayments and

resulted in bank failures. In order to mitigate risks, banks require collateral, which helped to cover outstanding loan amounts by selling the pledged property on open auctions. However, if the collateral foreclosed did not cover the outstanding balance, the remaining balance recovered by searching and selling attachable properties held in the name of the principal borrower. If the outstanding loan balance has not been covered after selling the properties of borrowers, a toxic asset remained on the balance sheet exposing the bank to ultimate failure. Thereby the bank suffered from capital erosion that resulted in deposit runs. The main source of these problems was that banks did not manage their funds to increase their performance (Adeusi, Akeke, Adebisi & Oladunjoye, 2013). In traditional banking activities after loans have disbursed to borrowers the loan repayment collection process that became too long due to the borrower's failure to pay the repayment caused the short run liquidity problem.

The main cause of the bank's credit crunch and liquidity problems is that the bank holds the customer's funds as own assets on the balance sheet. Banks' buying and selling of funds to get excessive revenue from loans, deprive customers of their right to get reasonable returns on their deposited funds. Therefore, banks were from time to time unable to control dynamic credit and liquidity risks. To mitigate these problems banks shifted from traditional banking activities to non-traditional banking activities to get non-interest income and avoid the risk related to the credit crunch (Damankah, Anku-Tsedde & Amankwaa, 2014). As a result of this, the interaction of demand and supply of money created a credit risk transfer market, where the bank transfers credit risk from 'originating and holding' on the balance sheet to 'originating and disbursing' to investors in the market, even though, this has not solved credit crunch and liquidity problems (Bruno & Bedendo, 2013).

The bank's risk management feasibility study is less integrated with the borrower's project failures when the feasible project becomes reality. The uncertainty of the borrowers' business project outcome that leads the loan repayment uncertainly made the banks' failure common in every country. To mitigate risk, the bank secured loan against collateral, which helped to cover the remaining loan amount by selling the pledged property publicly.

However, an interest rate commission agent banking business model mutually benefits investors, entrepreneurs, depositors and the bank by establishing lucrative interest rate directly to fund providers and the bank to satisfy the demand of the entrepreneurs. Since the bank

administers the investor loan funding to entrepreneur collecting interest rate commission from the investor's credit price, the bank balance sheet is not affected by risks such as credit risk and liquidity crunch. The bank also mobilises more stable saving by paying discrete market deposit interest rate incentive on depositors' accounts. Since AIRCABS business model could work with other banking business models according to the organisation's incentive, structure, culture and skills of the employees, it could protect the bank and fund provider from windfall and permanent banking risks where other business models fail to do so. Since the bank gets uninterrupted commission income without holding the depositor's fund as its own asset on its balance sheet and without paying the funding cost for investor loan funding, the agent bank's sustainability in the market is improved by applying AIRCABS.

1.4. PROBLEM STATEMENT

A business model adopted by banks that assists to retain risk or transfer risk to other financial institutions has the same effect on the industry. Because of this, the financial crisis that emanates from credit risk and liquidity crunch, which results in bank failure, has not yet been solved (Moise & Ilie, 2012; Adrian, 2015 and Memmel, Sachs & Stein, 2012). To solve these problems, an interest rate commission agent banking business model that transfers credit and liquidity risks to investors and entrepreneurs by increasing the bank's sustainability, profitability and stable deposit has not yet empirically been developed (Tessema & Kruger, 2015 and 2016).

1.4.1. Thesis statement

A bank's credit risk emanating from toxic or non-performing asset or contagion asset and liquidity crunch could be decreased by applying AIRCABS by which the agent bank transfers credit risk and liquidity crunch to investors and entrepreneurs to maximise profitability and sustainability in a market.

1.5. RESEARCH HYPOTHESIS

In order to investigate the relationship between variables the following null and alternative hypotheses were developed:

H0: credit risk and liquidity crunch have no positive effect on AIRCABS

H1: investor loan funding has a positive effect on profitability and sustainability of an interest rate commission agent bank

H2: discrete market deposit interest rate incentive has a positive effect on stable deposit mobilisation in the bank.

1.6. RATIONALITY OF THE STUDY

Traditional banks are involved in the buying of funds from investors to sell it to entrepreneurs. The cost of buying funds from investors and selling them to entrepreneurs using an interest rate commission agent bank is expressed by an interest rate. Unless banks disbursed loans and collected deposits continuously throughout the year, the bank commission from non-interest rate and service charge collected from customers will not be enough to cover the administrative and financial expense of the bank. Due to an informal market where money circulates outside the banking system, loan defaults that cause liquidity and credit risks, granting long-term loans using short-term deposits, and the continuous erosion of the deposited fund at the bank have led banks into financial crisis. To curb the financial instability problem that arose from the financial crisis, different banking business models were developed, but each of these became a catalyst for financial crisis. However, no banking business model, which transfers credit risk and liquidity crunch to investor and entrepreneur, has been developed.

In order to get a permanent solution for banks' financial instability, developing an interest commission agent banking system business model for investor loan funding to an entrepreneur is essential. The model enables the bank to collect interest commission without holding the investors' funds as an asset on the balance sheet by managing the disbursed investor's fund to the entrepreneur. Since interest rate is a medium of fund exchange, this business model enables investors to benefit from the credit price directly, and indirectly the bank can benefit from the commission and exemption of deposit interest rate expense.

The bank can mobilise stable funds by paying discrete market deposit interest rate incentive based on the volume, period and stability of the fund at the depositor's account. Depositors who wish to deposit money at the bank were seeking to put their deposit in a safe place and to get deposit interest rate. Investors who wished to lend their funds to entrepreneurs with the bank as an agent gets a credit price and confidence in their fund return.

An interest rate commission agent banking business model enables banks to increase loan and deposit in parallel by eliminating bank contagion, instability of deposit and liquidity problem, money laundering, the gap between the informal and formal market, the gap between banked

and unbanked/under-banked society, and the misunderstanding of the banking system in society.

The business model enables investors and entrepreneurs to be the principal promoters of the banking system in society rather than the bank tediously promoting itself to the society. It also makes individuals to be a borrower and lender to each other. As individual becomes a lender and borrower in society with the bank as an agent, investments are enhanced, and poverty is alleviated.

1.7. SIGNIFICANT OF ORIGINAL CONTRIBUTION

The stability of deposit and attraction of more loans can be enhanced by creating a new interest rate commission agent bank, creating a new banking system to attract loans for deposit supply, and by creating a discrete market deposit interest rate incentive for stable deposit mobilisation. To increase the sustainability of banking business in the market, the bank that works as an interest rate commission agent is important for several reasons, namely to:

- Enhance stable fund in the bank
- Decrease the informal money market
- Attract funds from the unbanked and informal financial market
- Eradicate banking problems such as maturity mismatch of a bank's asset and liability, bad debt or contagion, liquidity drought, capital inadequacy, limited loans to be disbursed depending on limited stable deposit and seasonal deposit mobilisation where the majority of the society is unbanked/under banked
- Enable the bank to transfer credit risk to the fund holder and investor so that banking crisis are mitigated
- Get the individual/organs fund holder/provider in the society into the banking system
- Bring fast growth of the country through accelerated investment
- Increase the societal awareness of the banking system
- Develop the opportunity of banking business as well as the market
- Increase the contribution of banks and society in the development
- Enable the fund owner to search for potential borrowers with or without collateral in the market to provide a credit facility with the bank as an agent

1.7.1. Significance of the solution to the theory

The need of investors to invest their funds in an alternative business is to generate a profit excess above the principal amount, which can be expressed by price in terms of an interest rate. The need of depositors to deposit their funds at a bank is the need to have a safe place for their money and an interest rate, which is the price for the use of fund by the bank. Since interest rate is a basic factor to increase the demand of the investor to fund loans to the entrepreneur and the depositor to deposit their money in the bank, directly benefiting an interest rate to investors for the use of funds by the entrepreneur and to depositors for the use of the funds by the bank will enhance loans and deposits mobilisation in parallel. The bank agency function to investors' loan funding to entrepreneurs is therefore important for the following reasons:

- The right of the investor and depositor to get their fund return, while keeping the funds safely at the bank is ensured.
- Investment in a country can be enhanced and poverty will be reduced.
- The confidence of individuals to use the banking system will be enhanced.
- The stability of the banking business will be enhanced.
- The government revenue collection from investment will increase.
- An individual can search potential entrepreneurs to lend his/her fund with the bank as an agent.
- Bank's financial expense will be null unless it needs to utilise the fund for its own investment.
- The bank's profit will be improved.
- The stability of the country's economy will be enhanced.
- Inflation can be diminished by increasing the value of money.

1.8. IMPACT OF THE RESEARCH ON SOCIETY

An IRCABM holds mutual benefit for investors, depositors, entrepreneurs and the bank. It enhances the societal interest of involvement in investment. This increases substitution products and leads to the improvement of the balance of payment. Since the model encourages individuals to lend and borrow legally with the bank as an agent, the right and benefit of the individual lender and the borrower will not be affected. An interest rate commission agent banking business model can create an outlet for an individual to be highly creative in developing

new and substitution products to benefit the society at low cost. Multiplying investment opportunity, the research study of an interest rate commission agent banking business model does not have a negative impact on society.

1.9. DISSEMINATION OF THE RESEARCH

An article based on the proposed new banking model theory (chapter 3), entitled “An interest rate commission agent banking system” was published in *Journal of Banks and Bank System*, Vol.10, Issue 3, and is attached as appendix A. This article explains the new banking model in more detail. A paper with a different version under the same title was successfully delivered at the 28th Australian finance and banking conference in 2015 in Sydney, Australia (Appendix A1).

An article based on the methodology to test the viability of AIRCABS (chapter 4) was published in the *International Journal of Business Research*, volume 16, issue 5 (Appendix B) and an article with a different version was successfully presented at the 8th International Conference on Economics, Finance and Management Outlook and also published in the *International Journal of Economic Perspective* volume 11, issues 1 (Appendixes B2 and B2).

An article explaining the findings of the viability study (chapter 5) entitled “Testing performance of an interest rate commission agent banking system” was published in the international journal *Banks and Bank systems* volume 12, issue 3, which is attached in Appendix C.

Finally, an article proposing an improved model (chapter 6) entitled “An improvement on an interest rate commission agent banking system” was published in the *International Journal of Economics and Financial Issues*, volume 7, issue 4, which is attached as Appendix D.

1.10. WHY WOULD THIS BE RESEARCHED AT BUSINESS SCHOOL?

The business school is well equipped with knowledge and skills to consider the business model from different angles. Since many business models have been attested and passed by the business school for applications, the capacity of the school to see the advantage and disadvantage of newly developed business models is wide. The school is host to different business-related scholars, current business-related problems and solutions, and newly developed business-related articles. Researching an interest rate commission agent banking business model through a business school enables the researcher to approach the research

from different view point and to bring the study to a stage where it will be applicable and publishable.

1.11. ETHICS

The raw data collected for this thesis concerns money purchasing price, the so-called 'interest rate'. It is a fact that the demand to sell money increases as its purchase price increases. The demand for selling and buying money can be expressed on an individual or institutional level. Since the issue concerns and is well understood by all individual investors, entrepreneurs and institutions, ethical issues may not rise during the study period.

1.12. LIMITATIONS

An interest rate commission agent banking business model is a new concept and secondary data for investors' loan funding and deposit interest rate incentive may not be found unless a conclusion of the trend and impact of loan and deposit supply is reached as a result of interest rate movement in the market. The data collected for the research are limited to banks' branches/divisions and unbanked/under banked individuals in Addis Ababa, Ethiopia. The collected data were analysed based on canonical correlation and multinomial logistic regression may not give a prudent result rather than the approximation. Since there is no empirically studied banking business model, it may be difficult to find a reference to support the research result.

The study is confined to banks' branches/divisions and unbanked/under banked individuals or organs in Addis Ababa, Ethiopia that have a capacity of administrating and funding loan. The survey, therefore, did not cover all informal markets and outlying branches of banks.

1.13. SCOPE OF THE STUDY

The research study focused on the effect of loan funding on an interest rate commission agent bank, the effect of interest rate incentive on bank's stable deposit mobilisation and the effect of toxic asset, non-performing asset, contagion asset and liquidity problem on AIRCABS. Other factors that have direct or indirect influences on banks' loan mobilisation, stable deposit mobilisation and AIRCABS are considered outside the scope of this research study. Though the model is new and required both qualitative and quantitative studies, an in-depth qualitative study was excluded from this research study.

1.14. HOW THIS RESEARCH CAN CHANGE POLICY

Though banks applied different models to maximise profit by mitigating credit risk, the models applied were not in a position to resist the banking crisis, which can arise from time to time. Bank models became a catalyst for the banking crisis. The bank met a challenge to reduce non-performing assets, increase stable deposit and satisfy demand for loan. To avoid banking risks associated with credit, liquidity and interest rate, developing an IRCABM is important.

Basically, the bank is established to work as a mediator by collecting money from those who have a surplus to disburse it to those who are found in the scarcity of money. To retain collected funds, banks pay an interest rate into depositors' account even though the deposited money can be withdrawn at any time causing the bank to become insolvent. The bank affected by the credit crunch and the depositors lost their deposit fund at the time of urgent financial need. Banks use the depositors' right benefits by collecting a credit price, which is twice the deposit interest rate paid to depositors. Since the bank does not consult depositors about using their funds for a loan, banks deprive depositors the right to receive benefit from their deposit funds and depositors therefore need to deposit their funds in a safe place and look for a bank which can pay a relative better deposit interest rate. Competition among banks and depositors' unwillingness to continue depositing their money result in the instability of bank deposit. This leads to an increasing mismatch between asset and liability. As a result, the lack of funding in the bank for loan disbursement increases credit and liquidity risks. Though these are all practised by traditional banking policy, the gap cited above will be filled by applying AIRCABS.

Changing the current practice in banking policy for loan and deposit supply, releasing the research result, and ensuring a clearly defined interest rate commission agent banking policy will have a profound effect on society. Publishing the research result of the hypothesis in international accredited journals will be an important step to influence current policy.

1.15. LAYOUT OF THE THESIS

Chapter 1: Introducing AIRCABS

The chapter introduces the need to develop an interest rate commission agent banking business model and the strategies to be adopted by the agent bank. It presents the problem statement,

the objective of the study, the significance of the study, limitation of the study, research hypothesis and the background of the study.

Chapter 2: Literature review

The chapter discusses the efficiency of AIRCABS to avoid risks in an agent bank, enhancing the bank's stability in the market and to spur on financial stability. It looks at how an interest rate commission agent bank fills the gaps in Islamic and conventional banking activities and how to relieve the bank from toxic asset, non-performing asset or contagion. It discusses the bank's role as a financier and commission agent bank, how sustainability of an interest rate commission agent bank and its determinants is maintained, how credit risk can be transferred to investors and entrepreneurs to solve liquidity and credit risks. It also looks at the applicability of AIRCABS to other banking business models, how AIRCABS prevents money laundering and also discusses how stable deposit mobilises in a bank.

Chapter 3: Theory of an interest rate commission agent bank

The chapter discusses the model development and strategies, an interest rate commission agent banking system (AIRCABS) model, determinants of an interest rate commission agent bank, accounting entries treatment of interest rate commission agent banking system, pros and cons of 360, 180 and 90-degrees lending strategies of the agent bank, pillars of AIRCABS, limitations on the bank to implement AIRCABS, applicability of banking law for an agent bank for investor loan funding, credit risk and liquidity crunch transferring mechanism, collateral pledged between parties, mode of loan repayment, deposit mobilisation strategy and limitation of the bank to implement AIRCABS .

Chapter 4: Research methodology

The chapter discusses the research approach, research design, unit of analysis, research participants and sample size. The chapter also discusses the sample and sampling method, the AIRCABS process flow model, material and methods, which contain measurement instruments, the method of analysis, canonical correlation analysis and multinomial logistic regressions analysis.

Chapter 5: Data analysis and research findings

The chapter discusses the problem statement, research hypothesis, statistical result and analysis, validity and reliability of the survey instruments, canonical correlation statistical result and discusses the statistical results of investor loan funding and discrete market deposit interest rate incentives.

Chapter 6: Discussion, recommendation and conclusion

The section discusses the results of the research, supported by relevant literature to remark on the application of the research result.

1.16. CHAPTER SUMMARY

The main function of a bank is to collect loan interest and pay deposit interest for the use of money. An interest income from loan disbursed is a major profit source of a bank. Though the traditional banking system is useful for a bank's sustainability, its credibility is decreased and banks prefer to shift to non-traditional banking system to avoid credit risk and liquidity crunch. The major problem of the traditional banking system is that it exposes the bank to toxic asset, non-performing asset, contagion effect and liquidity crunch because it forces the bank to hold customer deposits as an asset on its balance sheet.

The financial crisis that emanated from bank runs, bad debt, asset and liability mismatch, excessive leverage, sovereign default and liquidity problems, which leads to bank failure has been unsolved for decades. To solve these problems banks have adopted several models, but each was a catalyst for the financial crisis. However, these problems can be solved by applying AIRCABS, which is a system whereby the bank is an agent of investors loan funding to entrepreneurs getting the fund seller and buyer agreement and administering the loan after disbursement by retaining reasonable interest rate commission from the agreed investor's loan funding credit price. As interest rate increased, the demand for an interest rate commission agent bank increased. Though the main sources of financial crisis such as a toxic asset, non-performing loans, contagion and liquidity problems of the bank have been unsolved for decades, this research solves these banks' chronic problems by developing AIRCABS.

Traditional banks are limited to buying deposits from customers to sell to entrepreneurs at the credit price, whereas, non-traditional banks are involved in selling their service to their customer according to the terms and tariff of the bank.

Banks as financial intermediary, safeguards customer deposits and uses it for loans by paying deposit interest rate into the depositor's account. The loan disbursed to the borrower must be returned within the time specified in the loan contract. If the borrower defaults, the bank sells collateral pledged for the loan and other attachable properties of the borrower to collect the debt.

As the number of loan defaulters increases, the bank cannot repay the depositors' fund with accrued interest and this results in a bank run. Since the bank uses the savers' money to generate interest income, its liquid cash is always less than its loan portfolio. This makes the bank susceptible to credit risk and liquidity crunch, which in turn causes a banking crisis. Although the banking structure changed through competition, their functions are stable (Merton, 1995). The main element of this problem is that banks have not yet developed an alternative bank's intermediation model by which they can transfer credit risk and continue to maximise their profit and sustainability. Therefore, the bank's function of buying deposits from savers and selling it to borrowers considering it as an asset on the balance sheet exposes it to problems that limit the bank's ability as intermediary to obtain continuous sufficient fund from depositors.

In order to solve the banking crisis that emanates from credit risk and liquidity crunch, an interest rate commission agent banking business model was developed. The model is designed to enhance bank profitability and sustainability by transferring credit and liquidity risks to investors and entrepreneurs, and administering investor funds disbursed to the entrepreneurs by collecting interest rate commission from the credit price and project selection fee from investors until the loan is settled.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

To critically analyse the status of research on the subject matter, a comprehensive list of relevant literature that support the argument of the research study is critically reviewed. Since the subject of the study is new, no relevant literature has been published. However, the literature review is based on the research study questions to analysis, compare and contrast the research study with various articles.

The chapter is organised as follows: Section 2.2 discusses the efficiency of AIRCABS to avoid risks in agent banks. Section 2.3 deals with enhancing the bank's stability in the market to spur on financial stability. Section 2.4 discusses how an interest rate commission agent bank fills the gaps in Islamic and conventional banking activities. Section 2.5 covers a performance comparison between AIRCABS and conventional banking. Section 2.6 deals with relieving banks of toxic assets, non-performing assets or contagion. Section 2.7 discusses the bank's role as a financier and commission agent bank. Section 2.8 discusses the sustainability of an interest rate commission agent bank. Section 2.9 discusses determinants of an interest rate commission of agent bank. Section 2.10 discusses transferring credit risk to investors and entrepreneurs to solve credit risk and liquidity crunch. Section 2.11 discusses the applicability of AIRCABS to other banking business models. Section 2.12 discusses how AIRCABS prevents money laundering. Section 2.13 discusses stable deposit mobilisation in a bank. Section 2.14 contains a summary of the literature review.

2.2. EFFICIENCY OF AIRCABS TO AVOID RISKS IN AN AGENT BANK

The shift of bank activities from traditional to non-traditional, which collect revenue from non-interest income and avoid credit risk and liquidity crunch, is of global importance. Banks that have lower deposit levels, higher anticipated loan losses and high liquidity problems are engaged in non-interest income generating activities to revive their losses and to enhance their sustainability in a market (Damankah et al, 2014). In order to avoid the anticipated loan loss and liquidity problems, banks moved from traditional bank activities to non-traditional bank activities. However, an interest rate commission agent bank collects interest rate commission without holding customer deposits as an asset. Since the agent bank administer investor loan funding to entrepreneurs, the agent bank did not cover loan loss and solve liquidity problems.

Fee-based income is riskier than margin income, but offer diversification benefits to bank shareholders since it reduces the risk associated with the impact of poor asset quality on shareholder returns. Fee-based income increased the bank's exposure to business cycles and exposed the bank to systematic risk (Gorener & Choi, 2013). Holding customer funds as an asset on the balance sheet exposed the bank to business cycles and systematic risk. Since an interest rate commission agent bank does not hold customer's funds as its own asset, the agent bank maximises interest commission income by transferring credit risk and liquidity risk to investors and entrepreneurs.

Greater reliance on non-interest income, particularly commission income, is associated with higher systematic risk (Jaffar, Mabwe & Webb, 2014). Because of the high competition among traditional banks, non-interest income of the bank is volatile and exposes the bank to higher systematic risk. However, an interest rate commission based on the loan interest rate offered to entrepreneurs is not volatile like the commissions collected by traditional banks' service selling. Because of this, an interest rate commission agent bank is not exposed to greater systematic risk.

One of the factors that causes the bank's balance sheet to grow is non-performing loans or contagions. The bank's balance sheet size growth increases systematic risk (Gan, 2014). Non-performing loan increases the bank balance sheet size and causes systematic risk to increase. AIRCABS does not hold the disbursed loan as an asset on the bank's balance sheet. Instead, the trade of the loan disbursement from the investor account to an entrepreneur takes place by holding the loan amount on the off-balance sheet to maintain the bank's balance sheet without growth. Hereby AIRCABS is kept safe from credit risk, systematic risk, interest rate risk and liquidity risk.

The bank's non-interest income from service rendering, such as fee and commission income, is not affected by a change in market interest. The bank that generates non-interest income has no relationship with changes in interest rate risk or idiosyncratic risk, but by the fee-based income of the bank (Gorener & Choi, 2013). The non-interest income of the bank is not affected by interest rate risks. Similarly, the interest rate commission of an agent bank is not affected by changes in interest rate risk or idiosyncratic risk. The agent bank transfers credit and liquidity risks to investors and entrepreneurs to maximise its interest rate commission income.

To avoid credit risk and liquidity problems, banks that followed traditional banking principles shifted from originate to hold the credit risk to originate to distribute credit risk model, which focused on (i) short-term traders of financial products, (ii) complex financial products such as derivatives and funding sources, rather than traditional deposit. Battaglia and Gallo (2013) found that securitising banks have, on average, higher expected losses in case of extreme events. This indicated that the traditional and non-traditional business models do not resist credit and liquidity risks, but rather became catalysts for a financial crisis. However, AIRCABS turned the bank profitable without holding the disbursed loans as an asset on its balance sheet and sufficiently maintains its sustainability during a financial crisis.

Unlike the traditional banking model, banks considered models following securitisation and derivatives as basic tools to reduce capital requirement and improve revenue, but as a consequence this had negative repercussions on lending standards and the quality of loans, which indirectly led to a weakening of the financial system (Bruno & Bedendo, 2013). Though credit enhancement has a positive effect on securitisation, the risk associated with securitisation and credit enhancement arose when the bank poorly performed securitisation and became the source of risk for securitising the bank. However, an interest rate commission agent bank transferred credit risk and liquidity crunch to investors and entrepreneurs to increase its sustainability in the market.

Casu, Clare, Sarkisyan and Thomas (2013) found that securitised banks tend to be more profitable institutions, with higher credit risk exposure. Despite a more diversified funding structure, they face higher funding costs. They also found that securitising banks tend to hold larger and less diversified loan portfolios, have less liquidity, and hold less capital. However, an interest rate commission agent bank does not pay interest rate into investor loan funding and has no funding cost. Since the agent bank administers investor loan funding, it has a high loan portfolio and capital.

With IRCABS, the agent bank of an investor checks that the loan disbursed is applied for the intended purpose as stated by the entrepreneur in the loan contract. However, when entrepreneurs are unable to meet the repayment of loan contract obligations, the disbursed loan is recouped by selling the collateral or the project as an ultimate step and alternative solution.

There is no risk to the agent bank associated with the defaulted loan since the bank transfers credit risk to an entrepreneur and an investor.

Shifting the business activities from traditional to non-traditional business activities plays an important role in the bank's risk behaviour to generate much more non-interest income (Wen & Yu, 2013). Transferring from traditional banking to non-traditional banking activities helps the bank to collect non-interest income and to mitigate risks related to credit and liquidity. AIRCABS gives investors and entrepreneurs an opportunity to create their own market with the bank as an agent for a fund provider in order to collect interest rate commission and to transfer credit and liquidity risks.

To enhance the capital adequacy and eliminate credit risk, banks securitise their asset through a legally established organ. Securitisation is considered an efficient way of liquidating an illiquid asset using asset back securities by which credit risk and liquidity risk are assumed adequately managed using securities trench. The increment of asset quality deterioration causes securitisation to become a catalyst for financial crisis. This causes investors to become more risk averse and reluctant to incur asset-backed securities. Robertson (2016) states that liquidity, capital relief and funding from securitisation helped to make lending rates more responsive. Pass-through with securitisation reduced consumer credit and business loan markets after the recent financial crisis. In contrast, mortgage markets increased pass-through after the financial crisis. The increase of interest pass-through increases securitisation. However, an interest rate commission agent bank administers investor's loan funding to entrepreneurs and the increase of interest rate increases the number of investors that want to finance entrepreneurs.

In the credit risk transfer market, banks used a credit default swap for more than a decade, but the irresponsible use of credit default swaps and other derivatives became a major cause of financial institutions' problems during the recent economic down turn. However, proper management of credit default swamps could reduce the moral hazard of the debtor (Senarath & Copp 2015). After applying the business model of proper management of business and gaining sufficient knowledge of the model it helped to mitigate the risk. To properly implement an interest rate commission agent banking business model the agent bank needs highly skilled staff with sound knowledge of the business model. When a bank applies this model it is able to administer investor loan funding to entrepreneurs and mitigate its business risks. This improves profitability

and eradicates bank crises emanating from credit, liquidity and capital permanently. Since the agent bank kept the mutual benefit of the investor, entrepreneur and the agent bank itself, no moral hazard is expected on the debtor.

Financial derivatives, in general, and credit default swaps, in particular, enabled an unattainable credit boom, but led to excessive risk taking by financial institutions, and contagion of credit risk transfer (Augustin, Subrahmanyam, Tang & Wang, 2016). Though financial derivative enable the bank to have unattainable credit, they are excessively exposed to credit risk and asset contagion. An interest rate commission agent bank transferred credit risk and liquidity crunch to investor and entrepreneur in order to maximise its interest rate commission and loan administration.

When borrowers' loan defaults, it brings a credit risk to the bank, which in turn causes a liquidity crunch. The sources of credit risk are the borrowers' internal poor credit management and commodity price shock. Borrowers without in-depth knowledge of credit and cash flow management exposed the bank to credit risk (Al-Shawabkeh & Kanungo, 2017). A bank loan borrower who has no knowledge of credit management gets into loan default. A bank loan borrower whose price of export items fail because of commodity price fluctuation and poor internal management contributes to the increment in a bank's non-performing loans. However, AIRCABS shifts credit risk and liquidity crunch to investors and entrepreneurs and receives loan interest commission from the investor loan funding until the loan is fully settled. While the agent bank administers the entrepreneurs' business, its main target is to mitigate credit and liquidity risk of investors as well as entrepreneurs. The agent bank supports entrepreneurs in managing their loan up to settlement. This makes it possible to keep the mutual benefit of investors, entrepreneurs and the agent bank itself.

In traditional banking theory, banks collect deposits from customers to disburse to entrepreneurs at a lucrative interest rate. They hold the disbursed loans as own asset on their balance sheet and thereby taking higher credit and liquidity risks. The source of bank credit risk is the customer funds that the bank uses to lend, having retained the associated risk. To solve these banking problems, banks can work as a financier and a commission agent bank according to market demands to avoid toxic asset and liquidity problems. By applying AIRCABS the profitability of the bank increases and toxic assets are avoided, which increases bank solvency by managing

customer funds to the benefit of customers and mobilising deposits with deposit interest rate incentives.

An interest rate commission agent bank uses a system whereby a bank manages investor loan funding to entrepreneurs and receives reasonable interest commission as compensation. The bank as an agent holds the disbursed funds from investor to entrepreneur on the liability side of the balance sheet; so, the net effect on the balance sheet will be nil. The agent bank works for the mutual benefit of the bank, investors and entrepreneurs and transfers credit and liquidity risks to investors and entrepreneurs to alleviate toxic asset.

In order to maintain the mutual benefit of the bank, investors/depositors and entrepreneurs, AIRCABS mitigates banking risks. Banks changed from service of buying and selling money to sell services in order to maximise profit and minimise risks (Wen & Yu, 2013). With traditional banking activities, banks are limited to buying deposits from customers to sell to entrepreneurs at loan interest rates, whereas, in non-traditional banking activities banks sell services to customers in accordance with the terms and tariffs of the bank. AIRCABS does not hold customer deposits as its own asset on its balance sheet. The transaction of loan disbursement and collection will be completed on the liability side of the balance sheet and thereby the bank transfers credit risk to investors and entrepreneurs by managing loan for an investor with or without pledging collateral according to the agreement between an investor and an entrepreneur in order to maximise profit and eliminate credit and liquidity risks.

Although interest income is less volatile than non-interest income, the systematic risk associated with non-interest income is higher than interest income (Jaffar et al, 2014). In traditional banking non-interest income exposed the bank to systematic risk. However, interest rate commission is non-volatile which continues until loan settlement does not expose the bank to systematic risk. Unless the bank uses investor funds for its own investment purposes, the agent bank does not pay deposit interest on the funds. Since AIRCABS model transfers credit risk to investors and entrepreneurs and collects a non-volatile commission from investor loan funding, the sustainability of the bank is more viable and reliable than that of other banks that uses other business models.

As an agent, the bank that administers the investor's loan funding to an entrepreneur is bound by the rules and regulations of the central bank and need to adhere to the terms and conditions

between an investor, entrepreneur and bank. Since the system gives full rights to investors and entrepreneurs, they are principal promoters of the bank. By maintaining the mutual benefit of the agent bank, investors and entrepreneurs, they create an opportunity for the growth of an individual/organ economy and this leads to the development of the economy as whole.

2.3. ENHANCING THE BANK'S STABILITY IN THE MARKET TO SPUR FINANCIAL STABILITY

AIRCABS can directly increase bank profitability. When loans are disbursed from the investor account, no deposit interest is paid on the loan disbursed and the bank collects commission from the investor's loan funding interest up to loan settlement. As deposit interest rates increase bank deposit mobilisations increases. Since increasing deposit interest rates increases deposit mobilisation, applying a discrete market interest rate incentive also increases deposit mobilisation.

As lending interest rates increases, investor loan funding is expected to increase, which, in turn, increases the bank's loan mobilisation. Since AIRCABS totally transfers credit risk to investors and entrepreneurs and increases liquidity by incentivising interest rate into deposit accounts, the bank is not expected to encounter credit, liquidity and interest rate risks.

Diversifying income-generating activities within and across interest and non-interest income-generating activities can enhance the profitability and stability of the bank. As bank income generating activities from non-interest income increase, bank efficiency on service rendering is enhanced. Trivedi (2015) found that the rising share of fee-based income and non-interest income in total income and diversification has a positive impact on profitability, but the impact on risk-adjusted performance and hence stability is not statistically significant. Though non-traditional banking activities had a direct impact on profitability, it did not maintained sustainability of the bank. By using AIRCABS, the interest rate commission increases as investor loan funding administration increases. Since the agent bank did not pay cost of fund for the investor, interest rate commission income of the agent bank has a direct positive impact on the profitability and sustainability of the agent bank.

Traditional banks that generate interest income increase the efficiency of service rendering at a slower rate. Since there is a positive association between interest and non-interest income, banks are focusing more on non-interest income-generating activities than depending only on

traditional interest-based income generating activities (Jaffar et al, 2014). Banks are moving from traditional banking to non-traditional banking activities to avoid credit risks and to collect non-interest income. In order to avoid toxic and contagion asset, an interest rate commission agent bank generate interest rate commission income without holding investor loan funding on its balance sheet. As the agent bank efficiency of service rendering increases its interest rate commission income generating activities increases.

Banks that generate income from non-interest sources are exposed to lower risk than banks that focus on generating interest income from traditional banking activities (Nguyen, Vo & Nguyen, 2015). Transferring from traditional banking activities to non-traditional banking activities helps to minimise banking risks. AIRCABS transfers credit risk and liquidity crunch to the investors and entrepreneurs and does not expose the bank to risks. Since interest-based banking has an adverse impact on production, income, employment, demand and supply, this brought borrowers into hazardous situations. It is therefore better to consider solutions based on the Islamic finance concept, which has greater social values than interest-based banking (Saleem, Khan & Siraj, 2013). Risk sharing mechanisms in Islamic banking enables greater social value than is the case in interest-based banking. However, an interest rate commission agent bank can collect commission up to loan settlement in return for administrating investor loan funding to entrepreneurs. As an interest rate commission agent bank, the bank is expected to have highly skilled staff with cutting edge risk prediction knowledge to mitigate investors and entrepreneurs' risks related to liquidity and credit. So, AIRCABS did not have an adverse impact on production, income, employment, demand and supply, and did not bring borrowers into hazardous situations.

Non-interest income is not affected by changes in the interest rate risk or idiosyncratic risk, but is affected by fee-based income-generating activities which increase banks' exposure to business cycles (Gorener & Choi, 2013). Traditional banks are exposed to interest rate risk or idiosyncratic risk and business cycle. However, an interest rate commission agent bank has no relationship with interest rate risk or idiosyncratic risk; and the agent bank is always on the safe side of liquidity and credit risks and is not exposed to the business cycle.

By administrating the investor loan funding to entrepreneurs, an interest rate commission agent bank receives non-volatile and uninterrupted commission from the credit price of investor loan

funding and it no longer calculates deposit interest on the funds disbursed. The bank increases profitability by alleviating funding cost. The bank as an interest rate commission agent can alleviate bank credit and liquidity risks by transferring credit risk to investors and entrepreneurs, and mobilise deposit incentivising interest rates to customer deposit accounts to make the bank more sustainable in the market.

An interest rate commission agent bank collects non-volatile, uninterrupted commission income from investor loan funds to enhance its sustainability in the market, which indirectly spurs financial stability. Since AIRCABS benefits investors, entrepreneurs and an agent bank, investors and entrepreneurs are expected to be principal promoters of the bank and the agent bank reduces the need to spend on advertising. So, AIRCABS can increase investment to accelerate development and thereby improve financial stability.

2.4. AN INTEREST RATE COMMISSION AGENT BANK FILLS THE GAPS IN ISLAMIC AND CONVENTIONAL BANKING ACTIVITIES

The sustainability of Islamic banking in the market depends on the bank's ability to access stable funds for investments and trading activity. Since Islamic banks pay dividends in terms of deposit interest at the end of an accounting period, branch expansion and the ratio of dividends to investment accounts in Islamic banks are the determinant factors for stable deposit mobilisation (Almejyesh & Rajha, 2014). In Islamic banks dividends in terms of interest rates are positively related to deposit mobilisation. In order to mobilise stable deposit, a bank can apply discrete market deposit interest rate incentives to enhance deposit mobilisation and later shift to agent bank position to administer the depositors' fund on investment that the bank had already invested.

The concept of profit and loss sharing made Islamic banking better than conventional banking, but there is still a problem with profits and loss distribution (Iqbal, 2013). Although the profit of the invested project in Islamic bank is distributed to depositors and the bank at the end of an accounting period, the fund holder frequently does not get his/her share. Profit share is generally determined by total profit earned by the bank at the end of the accounting period. Because of this, depositors in Islamic banks do not get their original funds with benefits periodically in the accounting year. However, AIRCABS benefits the investor by giving a portion of the principal amount and interest income periodically within the accounting year. As the repayment effected

by an entrepreneur, a portion of the principal loan amount and interest rate, which is the excess above the agent bank interest rate commission, is credited into the investor account.

Islamic banks do not have advanced products that satisfy the needs of society; and society does not have sufficient knowledge of the products. Because of this, Islamic banking is not profitable, and also not as liquid as conventional banking (Fayed, 2013). This indicates that Islamic banking by itself cannot produce profits as expected, unless it jointly works with conventional banks. An interest rate commission agent bank can work jointly with a conventional bank as one unit of the bank. The agent bank can make profit either independently or jointly with a conventional bank. Since the agent bank administers investor loan funding, the system made the agent bank highly liquid and profitable compared to Islamic and conventional banking.

Although conventional banks produce superior profits, liquidity and risk management over Islamic banks, it is subject to credit risk and liquidity crunch. Aman, Sharif and Arif, (2016) found that the business model of Islamic banks is inferior to the model of conventional banks. Islamic banks are less cost efficient than conventional banks. However, Islamic banks have superior asset quality with a better bank stability position. They found that Islamic bank stocks are less volatile than conventional banks after controlling for factors that influence price volatility measure. Both Islamic banking and conventional banking are subject to loss problems. By applying AIRCABS, bank stability will be enhanced in that it has uninterrupted profit without financial costs.

The risk associated with Islamic banking is minimised since the bank shares profit and loss with the customers as partners. The Islamic bank is, therefore, more effective to resist a banking crisis than conventional banks. Wahid and Dar (2016) found that Islamic banks are significantly less stable than conventional banks. However, when the analysis is conducted based on a sample of small and large banks, the results suggest that only large Islamic banks are less stable than large conventional banks. In contrast, small Islamic banks are found to be more stable than small conventional banks. Furthermore, the results reveal that bank size, the level of capitalisation and income diversification are important determinants for the stability of Malaysian Islamic and conventional banks. However, an interest rate commission agent bank collects commission without financial cost and the efficiency of the model to resist a financial crisis is even better than both conventional and Islamic models.

Islamic bank profit-loss sharing with depositors on alternative investment products made it better than risk mitigation by conventional banks. However, the Islamic bank is exposed to a massive deposit withdrawal risk due to a lower return on investment deposit products. Islamic banks prefer to invest less in non-profit-loss sharing products rather than in profit-loss-sharing products. Bilal and Amin (2015) found that the results of profitability measures indicate that Islamic banks remained less profitable; however, liquidity performances of Islamic banks were better than conventional banks. The conventional banks performed more efficiently and profitably than Islamic banks. Since Islamic financing is based on partnership of profit and loss, the bank invites customers to invest in identifying investment opportunities. Customers then benefit from the investment profit of the enterprise in which the funds are placed. The bank collects a management fee in return for services rendered. AIRCABS is based on the service to sell and administer loan funding, starting from loan assessment to settlement. It is the duty of agent banks to critically assess the loan process as is done by conventional banks on behalf of investors. Therefore, applying AIRCABS will prevent bank runs and maximise profitability and liquidity, which will be an improvement on Islamic and conventional banks.

An interest rate commission agent bank administers the investor loan funding by collecting an agreed interest rate commission. The agent bank's commissions can be a fixed percentage or as per the agreement between the fund provider and the agent bank. This will depend on the rules and regulations of the central bank. If the fund provider wishes to receive a discrete market deposit interest rate incentive, the bank can use the fund for its own investment by mobilising deposits and paying discrete market deposit interest rate incentives on depositor's accounts. If the fund provider decides to receive a lending interest rate, the bank starts calculating commission on the loan disbursed and stops paying deposit interest on the funds disbursed to the entrepreneur. In this case, the fund provider receives loan interest from the entrepreneur. The bank manages loans and deposits as the financier and the agent bank, and this benefits the majority of both the unbanked and banked population in society.

Hasan (2015) found that risk-sharing is not basic to Islamic bank, which encourages profit sharing of which sharing of risk is a consequence and not the cause, but the case is for reform, not for replacement of the current debt dominated system marked with increasing duality. This indicated that the share of profit and loss in an Islamic banking system enabled it to resist a banking crisis during the financial crisis in the years 2007 to 2009 somewhat better than the

conventional banking system. However, AIRCABS enhances the stability of the bank in the market by collecting uninterrupted profit without any financial cost. Those banks that apply AIRCABS are more profitable and solvent because they transfer credit and liquidity risks to investors and entrepreneurs.

2.5. PERFORMANCE COMPARISON BETWEEN AIRCABS AND CONVENTIONAL BANKING

In order to make profit, the conventional bank collects deposit from society to disburse it to entrepreneurs. The profitability of conventional banks depended on loan interest rate that it collected from debtor, commission, service charge, interest rate expense that it paid to depositors, administration expense and operational expense. Profitability of AIRCABS depended on interest rate commission income, service fee, administrative expense and operational expense. Although the net interest rate margin is one of the determinants of conventional banks' profitability, the determinant of profitability of an interest rate commission agent bank is interest rate commission. A conventional bank mobilises loans by collecting deposits from the society, whereas an interest rate commission agent bank mobilises loan by becoming an agent for investor loan funding. Conventional banks' benefit fund providers deposit interest rate, whereas an interest rate commission agent bank benefits fund provider credit price, which is normally higher than the deposit interest rate. Conventional banks pledge collateral against the loan disbursed whereas by an interest rate commission agent bank pledging collateral depends on the acquaintance between investor and entrepreneur. If investor and entrepreneur know each other the collateral pledging is optional. If the investor and the entrepreneur are not known to each other the collateral pledging is mandatory.

A conventional bank holds a disbursed loan as an asset on its balance sheet whereas an interest rate commission agent bank holds disbursed loan on an off-balance sheet. A conventional bank sells pledged collateral when loan default whereas an interest rate commission agent bank rents the project for the new entrepreneur who has the same project interest. Conventional banks pay deposit interest rate till the deposit account has closed, but an interest rate commission agent bank does not pay deposit interest rate. The return of conventional bank from loan disbursement is net interest rate margin while the return of an interest rate commission agent bank is from interest rate commission and fees.

Conventional banks disburse loans having retained credit risk and liquidity crunch, whereas an interest rate commission agent bank transfers credit risk and liquidity crunch to the investor and entrepreneur. Since interest rate commission collection by an interest rate commission agent bank stays up to loan settlement, the return on investment is higher than in a conventional bank. In order to generate an interest rate commission, the agent bank uses fixed asset. The return on fixed asset is therefore higher than a return on asset at a conventional bank. Since an interest rate commission agent bank does not hold disbursed loan as an asset, the asset quality of an interest rate commission agent bank is higher than at a conventional bank. Capital adequacy of an interest rate commission agent bank is higher than conventional bank's capital adequacy since the conventional bank holds non-performing asset.

An interest rate commission agent bank shall be equipped with cutting edge risk predicting staff in order to minimise the risk on investor. The conventional bank predicts risk to minimise its own risk. Conventional banks mobilise deposit using spot lottery, which benefit small depositors, whereas a bank that adopted an interest rate commission agent bank as one unit of the bank mobilises deposit by paying discrete market deposit interest rate incentive and by pooling depositors from depositor to an investor position to benefit credit price in terms of deposit interest rate from the fund already invested by the bank.

An interest rate commission agent bank collects loan repayment through an investor deposit account created for the purpose of loan disbursement and collection. An interest rate commission agent bank is therefore more liquid than a conventional bank. Non-interest income of conventional banks is more volatile than the loan interest rate. Since the interest rate commission of the agent bank is based on the credit price of loan disbursed from an investor to an entrepreneur, it is non-volatile than non-interest income of conventional banks. In order to generate non-interest income in a conventional bank, the bank shall be more efficient in providing service to its customer (Van der Westhuizen, 2010). Efficiency of the bank improves income generating activities of the bank. An interest rate commission agent bank is more efficient in technology and human capital in order to mitigate the risk related with investor fund disbursed to an entrepreneur. An interest rate commission agent bank is therefore more efficient than a conventional bank.

2.6. RELIEVING BANK FROM TOXIC ASSET, NON-PERFORMING ASSET OR CONTAGION

As the toxic asset of the bank increases, the bank's profitability decreases. Since toxic asset has an inverse relationship with capital, the sensitivity to change the capital of the bank positively affects the bank's profitability (Roman & Danuletiu, 2013). Lowering the bank's impaired asset, specialising in service quality and increasing liquidity helped to maintain bank performance. AIRCABS causes the bank not to hold customer's fund as an asset on its balance sheet and avoids bank toxic asset by rendering its services as an agent of the fund provider after the loan has been disbursed to an entrepreneur. So, toxic asset does not have a relationship with capital and profitability of an agent bank.

The bank faces a solvency problem as a result of holding toxic or impaired asset, which was the source of the financial crisis. As toxic asset of the bank increases, bank profitability decreases and distorts bank competition among financial institutions. Kadioglu, Telceken and Ocal (2017) found a significant relationship between non-performing loans and bank profitability. The higher the non-performing loan the lower is the bank profitability and return on equity. The problem of banks holding toxic or impaired asset that lead to insolvency and liquidity problems has not yet been solved. AIRCABS enables banks to transfer credit risk to an investor and entrepreneur without considering the fund disbursed as an asset to avoid the impact of bank toxic asset or impaired asset on the agent bank's profitability and sustainability in the market.

In a traditional bank, non-performing asset has a negative effect on the bank's profitability and capital (Olalekan & Adeyinka, 2013). As the bank's exposure to non-performing asset increased the bank capital and profitability decreased. Since IRCABS administers investor loan funding to the entrepreneur, the bank does not hold disbursed funds and interest rate commission of the agent bank is not affected by impaired or toxic asset, which indirectly enhances the bank's capital inadequacy.

Low credit demand, higher capitalisation and a significant increased share of non-performing loans pressure banks' interest rate margin down, which in turn decrease bank profitability (Dumicic & Ridzak, 2013). Non-performing asset negatively affected the bank's profitability. An interest rate commission agent collected sustainable interest rate commission, which indirectly

increased the agent bank profitability and capital. Saksonova (2014) found that net interest margin (NIM) is the most appropriate criterion for evaluating the effectiveness and stability of banks' operations and is one of the most important criteria for asset structure optimisation. The net interest rate margin of AIRCABS is interest rate commission, which can be an appropriate criterion for evaluating the effectiveness and stability of banks' operations and for asset structure optimisation.

To maintain sustainability of the bank, banks must manage their disbursed loan to their borrower to avoid non-performing asset. The major factors that led borrowers to default loans were external factors such as natural disasters, government policy and internal factors such as the borrower's character. Ogeisia, Alala, Musiega and Manase (2014) found that borrowers' character greatly influenced bank loan repayment. Diversification of disbursed loans outside the intended purpose stated in a loan contract by debtor led the loan to get into non-performing asset. However, an interest rate commission agent bank manages entrepreneur risk related to credit and liquidity using cutting edge risk predicting staff who indirectly enable the agent bank to manage the entrepreneurial character to collect loan repayment consistently. Keeping other factors constant, unless banks and government follow a new policy to avoid problems related to impaired asset, the bank's credit risk and liquidity crunch are enhanced in the short or long run. To remove toxic asset from a bank's balance sheet AIRCABS administers investor's loan funding without holding loans as an asset on the balance sheet. This helps to solve banks' chronic problems, credit risk and liquidity crunch.

In order to refill the liquidity gap, banks lend funds to similar financial institutions to develop an interbank market without considering their counterparty losses and credit worthiness and exposure to toxic asset. Asset contagion can be avoided by adopting AIRCABS, which avoids inter-bank loans market by mobilising loan and deposit directly from the society by dealing investor's fund to entrepreneurs and administering the fund after disbursement on behalf of an investor.

The bank faces a solvency problem as a result of holding toxic or impaired asset because it can be the source of a financial crisis. Asset contagion that can be transferred to countries across borders can be created by lending and borrowing among financial institutions without in-depth study of counterparty risks. Dungey and Gajurel (2015) found that banking crisis shocks are

transmitted from a foreign jurisdiction via idiosyncratic contagion, which increases the likelihood of a systemic crisis in the domestic banking system by almost 37 per cent, whereas increased exposure via systematic contagion does not necessarily destabilise the domestic banking system. As the toxic asset of the bank increases the bank's profitability decreases. Since toxic asset has an inverse relationship with capital, the sensitivity to change the capital of the bank will positively affect the bank's profitability. Applying AIRCABS therefore helps to stabilise the domestic banking system.

Proper management of the bank loans and deposits from conception to repayment leads to profit maximisation and reduces bank toxic asset as aimed for earlier. According to traditional banking theory, a bank collects deposits from customers to disburse it to entrepreneurs to get a lucrative interest and holds the disbursed loan as its own asset on its balance sheet. This increases credit risk and liquidity risk. The source of the bank credit crunch is that the bank bears the risk associated with credit and liquidity problems. To solve these banking problems the bank should work as a financier and commission agent bank, which will avoid bank toxic asset and liquidity problem. Applying AIRCABS increases bank profitability and avoids bank toxic asset. This increases bank solvency by managing customer funds for customer benefit and mobilising deposit incentivising deposit accounts with an interest rate.

An interest rate commission agent bank is a system a bank can adopt to manage the investor loan funding to an entrepreneur by collecting reasonable interest rate commission from investor credit price. Therefore, the bank as an agent holds the disbursed loan from investor deposit to the entrepreneur deposit account on the liability side of the balance sheet and the net effect of the loan transaction on the balance sheet will be nil. Since the agent bank works for the mutual benefit of the bank, investor and entrepreneur and transfers credit and liquidity risks to investors and entrepreneurs, the bank toxic asset will be alleviated.

Banks can avoid bank toxic or non-performing asset or contagion and liquidity problem permanently by transferring credit risk to an investor and entrepreneur and by mobilising loan and deposit using investor's loan funding and discrete market interest rate incentive for deposit mobilisation respectively. The selected commission agent bank can disburse loans to entrepreneurs directly using stable fund if the individual depositor's interest is to get credit price instead of discrete market deposit interest rate incentive.

2.7. THE BANK'S ROLE AS FINANCIER AND COMMISSION AGENT BANK

While the agent bank administers the investor loan funding to an entrepreneur, it collects an interest rate commission and the excess above this interest rate commission is credited into the investor's account at the same bank. Ojeaga and Odejimi (2014) found that individual income and the increase of deposit interest increase bank deposit. This basic fact means that an interest rate can create a link among investor's loan funding, deposit mobilisation and the entrepreneur. By AIRCABS, the increase of interest rate increases investor loan funding. Applying discrete market deposit interest incentives also increases deposit mobilisation. In conventional banking the loan interest rate depends only on the past trend of the deposit interest rate (Kaymaz & Kaymaz, 2011) without considering administration expense. The loan interest rate set up in conventional banks depended on market deposit interest rate. Whereas, in the interest rate commission agent banking system the determining the loan interest rate is based on the past trend of loan interest rate specifically and the availability/scarcity of loanable funds in the market generally.

AIRCABS is based on the notion that as interest rate increases the demand of fund supplier also increases (Mashamba, Magweva & Gumbo, 2014). As the credit price increases the demand of investor to supply funds for the loan increases. In AIRCABS the increase of credit price increases the demand of investors to provide loan funding to entrepreneurs.

An interest rate commission agent bank administers the investor loan funding to entrepreneurs by collecting an agreed interest rate commission from the investor. The agent bank commission can be a fixed percentage or as per the agreement between the fund provider and the agent bank, depending on the central bank rules and regulations. If the fund provider wishes to receive a discrete market deposit interest rate incentive, the bank can use the fund for its own investment by mobilising deposit applying discrete market deposit interest rate incentive on the depositor's account. If the fund provider wants to convert to the investor, the bank will start to calculate the interest rate commission on the loan disbursed amount and cease calculation of deposit interest on the fund disbursed to the entrepreneur. The fund provider then receives the credit price in terms of the deposit interest rate. Managing loan and deposit as a financier and agent bank will benefit the majority of the unbanked and the banked population.

2.8. SUSTAINABILITY OF AN INTEREST RATE COMMISSION AGENT BANK

AIRCABS can directly increase the bank's profitability. When the loan is disbursed from investor account to entrepreneur deposit account, no saving interest is paid on the loan disbursed amount and the bank collects interest rate commission from investor's loan funding until loan settlement. As the deposit interest rate increases the bank deposit mobilisation will increase. Since increasing deposit interest rate increases deposit mobilisation, applying discrete market deposit interest rate incentive is also expected to increase deposit mobilisation. As the credit price increases, investor loan funding is expected to increase, which in turn increases the bank's loan mobilisation. Since AIRCABS totally transfers bank credit risk to the investor and entrepreneur, and increases liquidity by benefiting depositors' credit price instead of incentivising interest rate to a deposit account, the bank is never expected to encounter credit risk, liquidity risk and interest rate risk.

In administrating the investor loan funding to the entrepreneur, interest rate commission agent bank receives non-volatile and uninterrupted interest rate commission from investor loan funding. The bank no longer calculates deposit interest on the fund disbursed amount to improve profitability by alleviating funding cost. The bank as an interest rate commission agent bank alleviates credit risk and the liquidity crunch by transferring credit risk to investors and entrepreneurs, and mobilises deposit incentivising interest rate to the customer deposit account to improve the bank's sustainability.

The bank income from interest base is less volatile than the non-interest income even though the bank chooses to convert to non-traditional banking to generate non-interest income to mitigate credit risk. By using interest rate commission agent banking system the agent bank receives commission for the service rendered to investors. Since an interest rate commission is not affected by financial cost on deposit, it directly enhances the bank's profitability by transferring liquidity and credit risks to investors and entrepreneurs.

In traditional banking, interest income generating activities are based on financial cost for deposit mobilisation, whereas non-interest income generating activities focus on service efficiency. AIRCABS renders high quality cutting edge risk mitigating services to enhance profitability from sustainable interest commission income.

2.9. DETERMINANT OF AN INTEREST RATE COMMISSION OF AGENT BANK

The bank, as a financial institution, accepts money for deposit to lend it to an entrepreneur. Since the deposit at the bank is uni-directional with a loan, in traditional banking the determination of loan interest rate is based on the preceding trend of deposit interest rate (Hossain, Bhuiyan & Rahman, 2013). In traditional banking, the loan interest rate set up depends on the deposit interest rate. The loan interest rate determination used in an interest rate commission agent banking system is based on the consensus of the investor, entrepreneur and the agent bank having considered the central bank's rule and regulation. To mobilise deposits, the bank pays a low interest rate into depositors' accounts and charges loan interest rate more than twice the interest paid into depositors' accounts (Chakazamba, Matanda & Dube, 2013). In order to collect loan interest rate over the cost of money deposited at the bank, the bank holds the disbursed loan as an asset. Holding the disbursed loan as the bank's asset causes the bank to be affected by credit risk, liquidity risk and interest rate risk. The bank mobilises deposit by shifting to agent position when the depositor needs the credit price rather than deposit interest rate from the fund already invested by the bank.

To alleviate bank risks, several credit risk transferring business models were adopted by banks but they were a catalyst for financial crisis (Bruno & Bedendo, 2013). Banking models compelled banks to hold customers' fund as an asset on their balance sheet, which in the end led them to encounter a credit risk and liquidity crunch. AIRCABS, on the other hand, transferred credit and liquidity risks to the investor and entrepreneur and increased sustainability of the agent bank. Money depositors at banks could not fully exercise their right to receive the full benefit of their money deposited, but rather they only received unreasonable deposit interest rate, this forced them to join an informal market (Simon-oak & Jolaosho, 2013). Money depositors did not have an opportunity to lend their money to entrepreneurs using the bank as an agent. However, an interest rate commission agent bank let money depositors or fund holders to lend their money to an entrepreneur to collect credit price instead of deposit interest rate. The bank deposit mobilisation is affected by an informal financial system where most currency circulates out of the bank to avoid government tax and use money laundering (Ogbuabor & Malaolu, 2013). Informal financial market impedes bank deposit mobilisation. An interest rate commission agent bank led investor and entrepreneur to create their own market which indirectly increased the bank deposit mobilisation. So, applying higher deposit interest rate on deposit accounts will mobilise more

stable saving from the informal sector (Chakazamba et al, 2013). Deposit interest rate and deposit mobilisation have a positive association. By applying a discrete market deposit interest incentive depositors from the informal sector are attracted, which indirectly increases stable deposit mobilisation. In AIRCABS, the increase of credit price increases investor loan funding to an entrepreneur.

Increasing an interest rate commission for the agent bank because of the increase in the credit price that benefits investors as per the rules and regulations permitted by the central bank will increase the demand of investors to supply more loanable funds. Since AIRCABS administers the investor loan funding to entrepreneurs, benefiting investor a credit price incentivises the banked and unbanked population to use more bank products. Though the determination of loan interest rate in traditional banking is based on the preceding trend of the deposit interest rate, the credit price of the investor loan funding determined by an interest rate commission agent bank or by the will of the investor and entrepreneur based on the interaction of demand and supply of loans in the market subject to the rules and regulations of the central bank. If the fund provider chooses to receive a later credit price, but wishes to receive discrete market deposit interest rate incentive now, the bank uses the fund for its own investment and pays discrete market interest into the depositor's account. When the fund provider converts to lending a portion of the fund already invested by the bank directly to the entrepreneur, the fund provider collects the credit price instead of the deposit interest rate. After the fund provider and the bank have agreed, the bank becomes an agent for inventor loan funding by receiving an interest rate commission in terms of credit price, which then will be paid into investor account.

Loan cost determination of interest rate commission agent bank is based on the trend of credit price, loan administration cost of the bank and current regulation of the central bank. Though, the loan interest rate finally approved by the agent bank, investor and entrepreneur can reach at consensus to approve the credit price after the agent bank has assessed its cost and profit for the loan administration.

The interest rate spread of the bank is affected by non-interest income, market share of the deposit, and the statutory reserve requirement. The higher the interest rate margin, the higher is the return on asset (Lartey, Antwi & Boadi, 2013). The higher net interest rate margin, the higher will be the bank profitability. Since AIRCABS used fixed asset to generate interest rate

commission without holding disbursed loan as an asset, the higher interest rate commission, the higher the return on asset will be. In traditional banking, net interest margin (NIM) of the bank is indirectly associated with higher operating expenses. Though inflation negatively affects profitability, it is positively and significantly related to the net interest margin (Doyran, 2013; Yuksel & Zengin, 2017). Inflation that has a direct association with operating expense, indirectly affects bank profitability except the net interest rate margin. Therefore, the profitability of AIRCABS is affected positively by inflation and operating expense.

Okoye and Eze (2013) found that lending rate and monetary policy have significant and positive effects on the Nigerian money deposit banks. The lending rate, which is associated with monetary policy, has a positive effect on bank deposit mobilisation and interest rate margin. In AIRCABS, the loan funding is provided by investors and depositors. The increase in the lending rate therefore also increases the level of stable funds, investor loan funding and the interest rate commission of the agent bank. Since an interest rate commission agent bank administers investors' loan funding, this banking system helps to attract money holders from the informal to the formal economic sector.

Therefore, investor loan funding, deposit mobilisation incentivising interest rate on depositors account, the credit price of the investor loan funding, the demand and supply of loan in the market, and informal financial sectors determine an agent bank's interest rate commission.

2.10. TRANSFERRING CREDIT RISK TO INVESTORS AND ENTREPRENEURS TO SOLVE CREDIT RISK AND LIQUIDITY CRUNCH

The agent bank that collects interest rate commission income from the investor's loan funding credit price by administering investor loan funding to an entrepreneur is non-volatile and continuous up to loan settlement. When the bank uses the investor fund for investment purposes, the bank that transfer to an agent bank ceases calculating deposit interest on the disbursed amount from an investor's deposit account. Since AIRCABS model transfer credit risk to the investor and entrepreneur and collects non-volatile interest rate commission from an investor loan funding credit price, the sustainability of the bank in the market will be more viable and reliable than banks that apply other business models in the same market.

The bank, as an agent, administers the investor's loan funding to an entrepreneur based on the central bank's rules and regulations and in what way the terms and conditions permit an investor,

entrepreneur and the bank to operate. Since the system gives full right benefit to an investor and an entrepreneur, investor and entrepreneur will be the principal motivators of the bank. Maintaining the mutual benefit to the bank, investor and entrepreneurs create an opportunity for growth of an individual/organ economy in the society and thereby lead to develop the country's whole economy.

AIRCABS does not hold the customer deposit as its own asset on the balance sheet. The transaction of loan disbursement and collection will be completed on the liability side of the balance sheet and thereby the bank transfers credit risk and liquidity crunch to the investor and entrepreneur by managing the loan on behalf of an investor with or without pledging collateral according to the agreement between an investor and entrepreneur.

2.11. APPLICABILITY OF AIRCABS TO OTHER BANKING BUSINESS MODEL

Running dual business models in line with the organisation's structure, culture and staff skills improves the profitability of the organisation's business. Lund and Nielsen (2014) found that partners positioned around a business model can be organised into a network-based business model that generates additional value for the core business model and for both the partners and the customers. Running two business models simultaneously with proper management in the same market leads to more profit. AIRCABS model fulfils the mutual benefit of investors and entrepreneurs without affecting the bank's organisational incentive, culture, structure and skills of employees. This business model can be handled by the bank along with other business models in a separate unit.

Ajisafe and Ajide (2014) and Idun and Aboagye (2013) indicated that competition among banks was positively related to economic growth in the short run as well as in the long run. However, running other business models with AIRCABS leads the competition among banks to be based on service quality and product specialisation and creates strong relationships among investors, entrepreneurs and the commission agent bank and results in better mutual benefit for all parties and helps to enhance economic development in the short run and the long run.

2.12. HOW AIRCABS PREVENTS MONEY LAUNDERING

To win the competition between banks, banks granted loan holding pledged collateral without proper consideration of the borrower's capacity and it became an unaffordable loan. Frequently,

once a business loan is disbursed to the borrower, banks charge higher interest and fees. Sometimes the banker may deceive to conceal the true nature of the loan terms; this makes the borrower more vulnerable to abusive practices. The predatory lending practice that reduces investment in a country and costs borrowers billions of dollars per year has not yet been validly solved. Neuenschwander and Proffitt (2014) found that predatory loan characteristics and the risk of default have a significant positive relationship. Therefore, people prefer to borrow funds from informal credit providers whose source of money could be illegitimate. This can also increase the circulation of currency in money laundering activities as loan funding could be from illicit funds. Trade-based money laundering that increases the danger of increasing crime in the community has not yet been regulated and monitored internationally (Chhina, 2014). Trade-based money laundering impedes the bank from investment which consequently leads to a lag in the economy as whole. However, under IRCABS the entrepreneur and the investor know each other or at least the bank knows one of them, so it would be easy for the agent bank to enforce the 'know your customer' principle to avoid trade-based money laundering and terrorism financing. Since the loan process using investor loan funding run by the agent bank is based on the central bank's rules and regulations, the created relationship among investor, entrepreneur and the agent bank makes the loan process assessment prudent. AIRCABS has not created any loophole to practise any predatory lending and money laundering behaviour since every step of it is followed by the fund provider.

2.13. STABLE DEPOSIT MOBILISATION IN A BANK

The mobilisation of deposit through interest rate incentive enables the bank to have more stable funds which could be used for loans. Paying deposit interest rate into a depositor's account enhances deposit mobilisation which in turn increases investment and economic growth (Ngouhouo & Mouchili, 2014). As deposit interest rate increases, the bank stable deposit mobilisation increases. With AIRCABS model, money depositors who had already sold their money for the bank's investment purpose collect discrete market deposit interest incentive and later have the opportunity of being an investor to collect proportionate credit price in terms of deposit interest rate from the fund already invested by the bank. The bank then becomes an agent to administer the fund for depositors. Banks give a discrete market deposit interest rate incentive to depositors depending on the progressive increment of the deposit level within a specified period. Otherwise, depositors can receive loan interest, which is the excess above the

agent bank interest rate commission, by lending the deposited funds to an entrepreneur with the bank as an agent.

Incentive in kind becomes the primary function for banks' deposit mobilisation. Ngouhouo and Mouchili (2014) recommended that the government should create an incentive framework conducive to the enhancement of gross national savings and investment to strengthen production and economic growth. However, incentive in kind did not benefit all depositors and led to seasonal deposit mobilisation. Since non-interest incentive is a spot lottery and did not benefit all depositors, focusing on interest rate incentive led to benefit all depositors and considered as an outlet for deposit mobilisation.

The informal economy impedes economic development by withholding currency circulation from the bank. However, coming up with interest rate strategies and products could attract both individual and firms from the informal sector to save within the formal sector (Chakazamba et al, 2013). Applying deposit interest rate into depositors account higher than the market rate attracts depositors from the informal to the formal sector. Therefore, calculating discrete market deposit interest incentive into potential depositor's account helps banks to mobilise more stable deposits from informal and formal sectors.

To attract more deposit from the unbanked, branch expansion, offering low cost account and increasing interest offered on deposit account are feasible solutions (Mashamba et al, 2014). In order to attract more deposit from the unbanked sector of society, an increased interest rate and branch expansion are considered as a basic solution. Mobilising more savings from society by applying a discrete market deposit interest rate incentive for potential depositors enables the bank to collect more stable money deposits from society, which in turn enables banks to grant more loans.

The increase of the informal sector's size indicates that the circulation of cash out of the bank is beyond the government's control. So, integrating the informal sector into the formal sector has been a challenge for governments of developing countries since the informal cash flow impedes investment through the banking sectors. Society in the informal economy prefers to consume now rather than save money for future consumption. As informality increases in the economy, the money circulation out of the bank that impedes the bank deposit mobilisation and investment

increases. By AIRCABS, banks can increase the number of individual fund providers and entrepreneurs, which in turn increases investment and economic growth.

The volume and mix of deposit can improve with the increase of interest rate incentive. As the bank creates a high gap between loan and deposit interest rates, the interest of the depositors to deposit stable funds at bank decreases (Mashamba et al, 2014). Increasing deposit interest rate encourages depositors to deposit their money at bank. Therefore, applying discrete market deposit interest rate incentive to the depositor's account reduces the gap between the loan interest rate and the interest rate paid on deposit accounts and invites depositors to get a substantial share of interest benefit.

The traditional bank holds customers' deposits as its own asset on its balance sheet and is exposed to toxic asset, contagion and liquidity drought, which consequently lead to the banking crisis. Since traditional banks have always lacked stable funding because of high competition among banks and money that circulates out of the bank due to fear of government tax, there is lending and borrowing among financial institutions, which transmits contagion across the border, which had affected the economy of least developed countries. Although, the agent banks transfer their credit and liquidity risks to individuals and non-financial institutions to mobilise more loan, transferring risks from a traditional bank to other financial institutions has the same effect on the overall industry.

Therefore, the bank mobilises stable deposit either by applying discrete market deposit interest rate incentives or by transferring depositors into investor position to benefit the credit price in terms of deposit interest rate from a portion of the fund already invested by the bank, which later became an agent for investors to administer the portion of deposited money already invested.

2.14. CHAPTER SUMMARY

Bank deposit mobilisation is affected by an informal financial system where most currency circulates out of bank to avoid government tax and for money laundering. However, increasing an interest rate on deposit account enables banks to mobilise more saving from the informal sector. The change of interest rate in the market affects bank profitability by lowering the interest rate margin. To increase the profitability of the bank, applying a discrete market deposit interest rate incentive is explained by conventional banking theory. Since the interest rate of deposits and loans has a significant and positive relationship, increasing the deposit interest rate

increases the net interest rate income of the bank. Though inflation affects the bank's profitability negatively, it has a positive and significant relationship with net interest rate margins.

In conventional banking activities, smaller banks with lower levels of deposits, banks with higher anticipated loan losses and high liquidity constraints engage in non-interest income generating activities. Therefore, income diversification that benefits bank shareholders by decreasing the insolvency risk and enhancing profitability has global importance.

The bank's dependency on non-interest income and growth of the balance sheet introduces higher systematic risk than margin income. Though interest income is more stable than non-interest income, the systematic risk associated with non-interest income is higher than interest income.

In order to improve profitability of the bank, improving the bank capital adequacy and reducing the non-performing asset are the basic steps to reduce credit risk and liquidity risk. The determinant factors of bank profitability are non-performing loans, management quality, capital adequacy and liquid asset.

To solve credit risk, banks use several models such as retail banking, investment banking, wholesale banking, securitisation, credit default swap, Islamic banking and narrow banking even though each has deficiency of holding customers' deposit as own asset on their own balance sheet. As a result, banks enter into a credit crisis even though the interaction of demand and supply of money created a credit risk transferring market where the bank transfer credit risk from originating and holding on the balance sheet to originating and disbursing to investors in the market.

Applying more than one business model in the same market can help banks to be more profitable. However, as asset quality decreases because of internal and external factors, securitisation and credit derivatives are not able to hedge the risk following credit disbursed and become catalyst for financial crisis and therefore investors become more risk averse. Conventional banks apply a universal banking model, retail banking models and wholesale banking models, both retail bank and investment banking models resisted the banking crisis, but the wholesale banking model reduced lending substantially. However, these three alternative banking business models continued to expose the bank to business risks. Though the traditional

banking model was a dominant model for more than a decade, it exposed banks to various severe losses even though it is considered as a key to growth.

The Islamic banking business model made depositors to share its annual profit after covering losses and expenses incurred during its accounting year. The concept of profit and loss sharing makes the Islamic banking model better than conventional banking. However, there is still the problem of sharing profit and loss between bank and depositor. Islamic financial institutions have proven that this new Islamic banking model of financial intermediation is not only viable but also feasible since in some business aspects the model is better than the model used in conventional banking. However, an interest rate commission agent banking business model can mutually benefit investors, entrepreneurs, depositors and the bank by establishing lucrative profits directly to fund providers and the bank to satisfy the demand of entrepreneurs. By this business model the level of deposit and loan supplies can be determined following the interest rate applied for loan and deposit supply. So the loan interest rate can be determined by the agent bank, the investor and the entrepreneur, based on the past trend of credit price, operating expense, inflation and the agent bank's commission.

The bank administers the investor's loan funding by collecting the interest commission from an investor loan funding credit price and the bank balance sheet is not affected by risks such as credit risk, liquidity risk, market risk and operational risk. Also, the bank mobilises more stable fund by paying discrete market deposit interest rate incentive into depositors' accounts. The model can work with other banking business model according to the organisation's incentive, structure, culture and skill of the employees. It can protect the bank and fund provider from windfall and permanent banking risks where other business models fail.

CHAPTER 3: THEORY OF AIRCABS

3.1. INTRODUCTION

A financial crisis emanates from bank runs, bad debt, asset-liability mismatch, excessive leverage, sovereign default, liquidity problems, and results in bank failure. These problems in the banking sector remain unsolved. To solve these problems, banks adopted several models even though each banking business model is a catalyst for financial crisis. However, one way of solving these problems is to apply AIRCABS. This is a system adopted by the bank to be an agent for investors' loan funding to entrepreneurs getting the fund seller and buyer agreement and then to administer the loan after disbursement by retaining reasonable interest rate commission from the agreed investor's loan funding credit price.

The chapter deals with how AIRCABS business model with lending strategies of 360, 180 and 90 degrees can be developed. The chapter also discusses how the model is efficient to solve the financial crisis by enhancing the profitability and sustainability of AIRCABS and maintaining the mutual benefit of an investor and entrepreneur.

The model development and strategies are explained in more detail in the following sections. Section 3.2 discusses AIRCABS model. Sections 3.2.1, 3.2.2 and 3.2.3 discuss the 360-degrees lending strategy, 180-degrees lending strategy and 90-degrees lending strategy respectively. Section 3.3 covers the determinants of an interest rate commission agent bank. Section 3.4 discusses accounting entries' treatment of AIRCABS. Section 3.4.1 discusses the bank accounting entries due to business transaction. Section 3.4.2 discusses internal auditing and risk management duties. Section 3.4.3 discusses the pros and cons of 360,180 and 90 degrees lending strategies of the agent bank. Section 3.4 discusses the pillars of AIRCABS. Section 3.6 deals with the limitations on the bank to implement IRCABS. Section 3.7 discusses the applicability of banking law for an agent bank of investor loan funding. Section 3.8 discusses credit risk and liquidity crunch transferring mechanism and 3.8.1 discusses credit and liquidity risks transferring mechanism of an interest rate commission agent bank. Section 3.9 discusses the collateral pledged between parties. Section 3.10 covers the mode of loan repayment. Section 3.11 discusses deposit mobilisation strategy and the chapter ends off with Section 3.12, which contains the chapter summary.

3.2. AN INTEREST RATE COMMISSION AGENT BANKING SYSTEM (AIRCABS)

AIRCABS is a system adopted by the bank which involves being an agent for investors' loan funding to entrepreneurs by including a fund seller and buyer agreement that the loan would be administered after disbursement by retaining reasonable interest rate commission from the agreed investors loan funding credit price (Tessema & Kruger, 2015 and 2016). Increasing the deposit interest rate increases deposit mobilisation. Similarly, increasing the credit price increases the demand of investors to provide loan funding, which in turn increases the bank's loan mobilisation. Tessema and Kruger (2015) recommend that to adopt AIRCABS, banks should develop certain lending strategies. These strategies are discussed in the sections below.

3.2.1. 360-degrees lending strategy

This strategy involves an investor and entrepreneur who know each other and an agent bank. The investor and entrepreneur go to the agent bank at the same time. An investor can fund a loan for an entrepreneur by selecting an entrepreneur's project from the market or through an interest rate commission agent bank with or without pledging entrepreneur's collateral. Should an investor wish to collect the funds disbursed to entrepreneurs, the agent bank sells the loan to another investor who has an interest to invest in the entrepreneur's business. Similarly, should the entrepreneur fail to pay as agreed, the agent bank rents the business to another entrepreneur who has the capacity to manage the business and to settle the loan without having ownership of the business. However, ownership can be transferred to the second entrepreneur by the will and approval of the investor and the bank. Therefore, the loan revolves from investor to entrepreneur and until it is settled, the bank collects an interest commission from the investor.

The process of 360-degrees lending strategy is depicted in figure 3.1

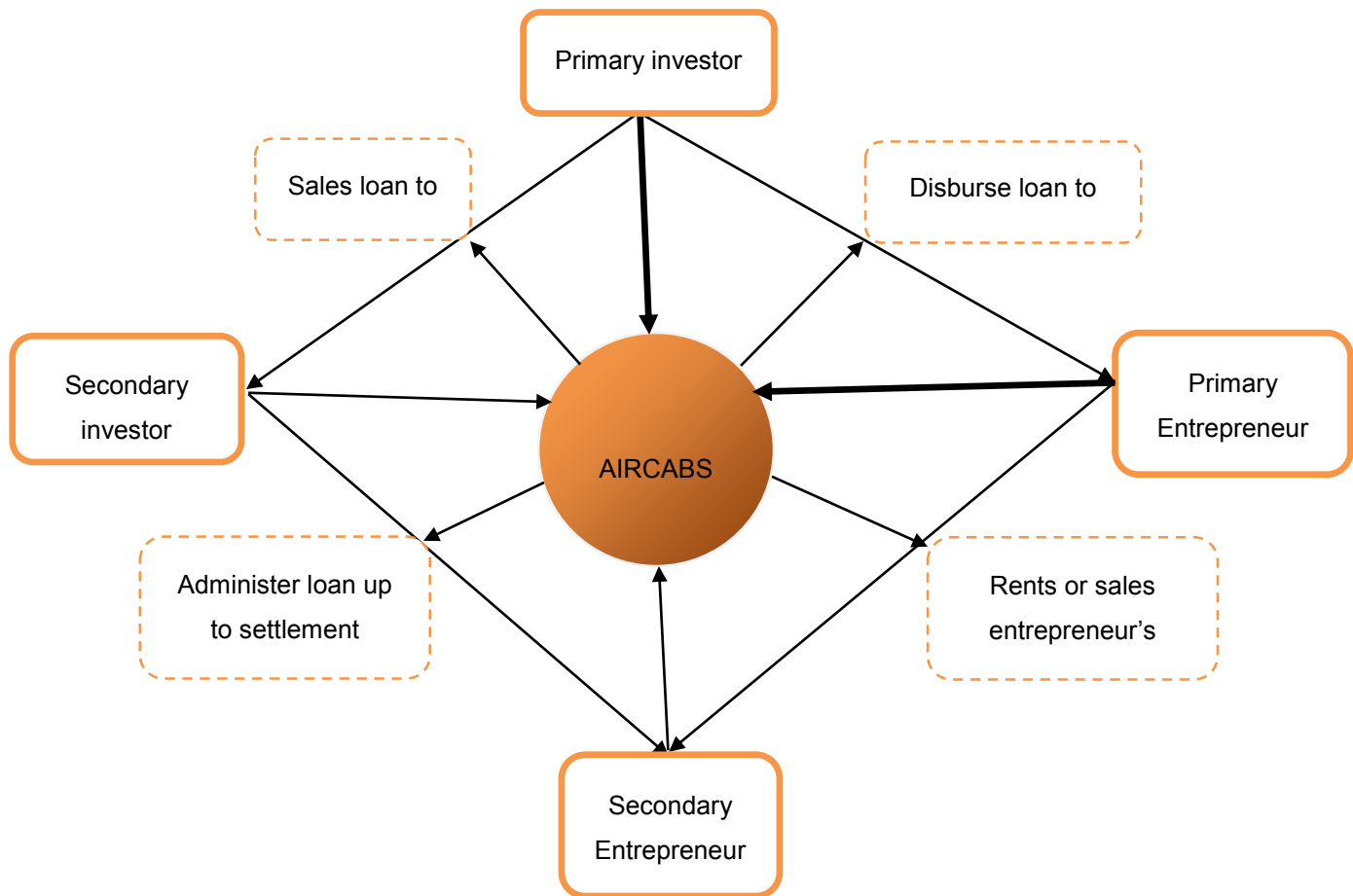


Figure 3.1: 360-degrees lending strategy

3.2.2. 180-degrees lending strategy

This strategy involves an investor and an entrepreneur who do not know each other, nor the bank. The investor and entrepreneur each goes to the agent bank at different times. With this lending strategy, an interest rate commission agent bank selects an entrepreneur's project and finances it through an investor. In selecting an entrepreneur's project, the bank charges an investor project selection fee. In this case, investor loan funding requires pledging collateral to ensure that the bank collects the disbursed funds if the entrepreneur fails to repay the loan.

The process of 180-degrees lending strategy is depicted in figure 3.2.

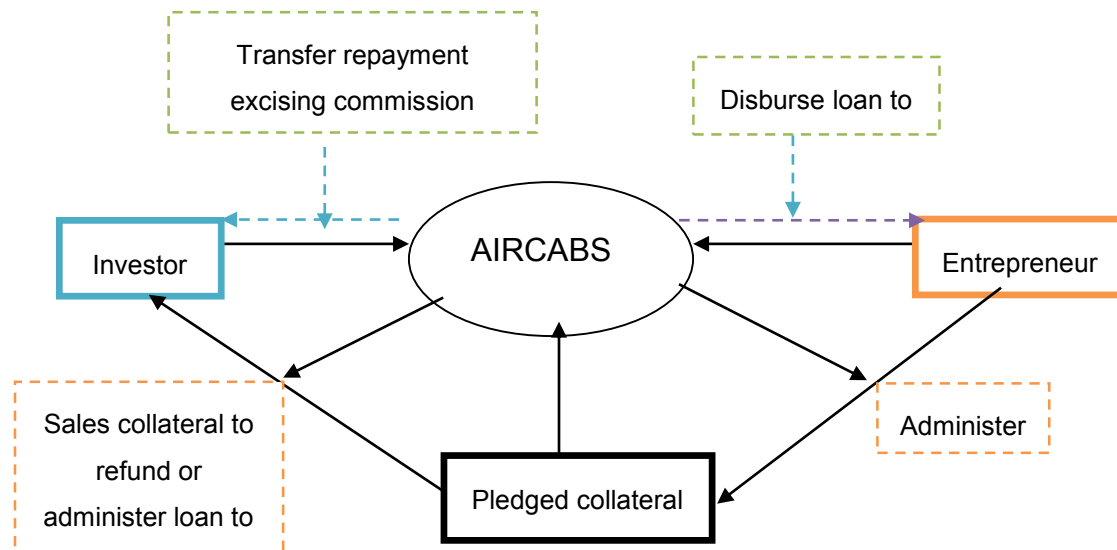


Figure 3.2: 180-degrees lending strategy

3.2.3. 90-degrees lending strategy

This lending strategy involves the fund provider and the bank. With this lending strategy, the fund provider deposits money and later shifts all or part of the fund for investment to fund the entrepreneur's project through an agent bank to collect the partial or full credit price. Otherwise, the investor sells the fund to the bank to collect a discrete market deposit interest incentive according to the deposit increment level. The process of 90-degrees lending strategy is depicted in figure 3.3.

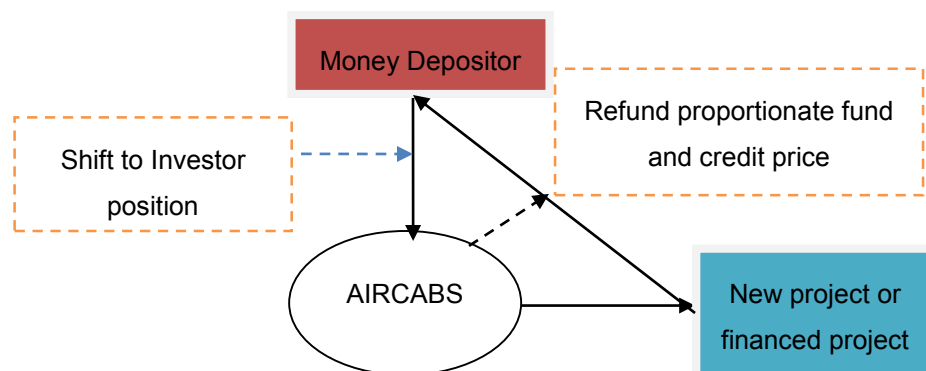


Figure 3.3: 90-degrees lending strategy

The three lending strategies of AIRCABS enable the agent bank to transfer credit and liquidity risks to investors and entrepreneurs. The main target of AIRCABS is to produce multiple investors and entrepreneurs in the society and to improve the investment and thereby contributing towards GDP. The increase of investment in a country increases the per capita income of the society and this increases the potential of the society to find an alternative investment solution with an interest rate commission agent bank. Since the cash flow in alternative investment solutions circulates from investor to entrepreneur, the potential of unbanked members of society to participate in investment solution using AIRCABS would be high. AIRCABS depends on service quality in delivering an efficient service with the support of cutting edge risk predicting professionals to support entrepreneurs in managing their business to enhance revenue generating capacity of their project, which in turn enables the bank to consistently collect loan repayment on behalf of an investor. The loan settlement would be in the loan period, which has already been set in the loan contract. An entrepreneur is nominated either by an investor or by the agent bank. The agent bank assesses the loan administration skill of an entrepreneur in order to determine if the nominated entrepreneur can manage the project, which would be fully financed by an investor. Should the skill of an entrepreneur as assessed by AIRCABS be found lacking sufficient knowledge of loan administration, AIRCABS would design the business plan for the new project with the support of the entrepreneur to minimise credit risk and operational risk. Strong follow-up on the entrepreneur's project must be done by AIRCABS. Management support of AIRCABS will help entrepreneurs to run their business to either horizontal business expansion or to vertical business specialisation of their products.

Figure 3.4 depicts AIRCABS as model, which shows how the agent bank processes the investor loan to entrepreneurs.

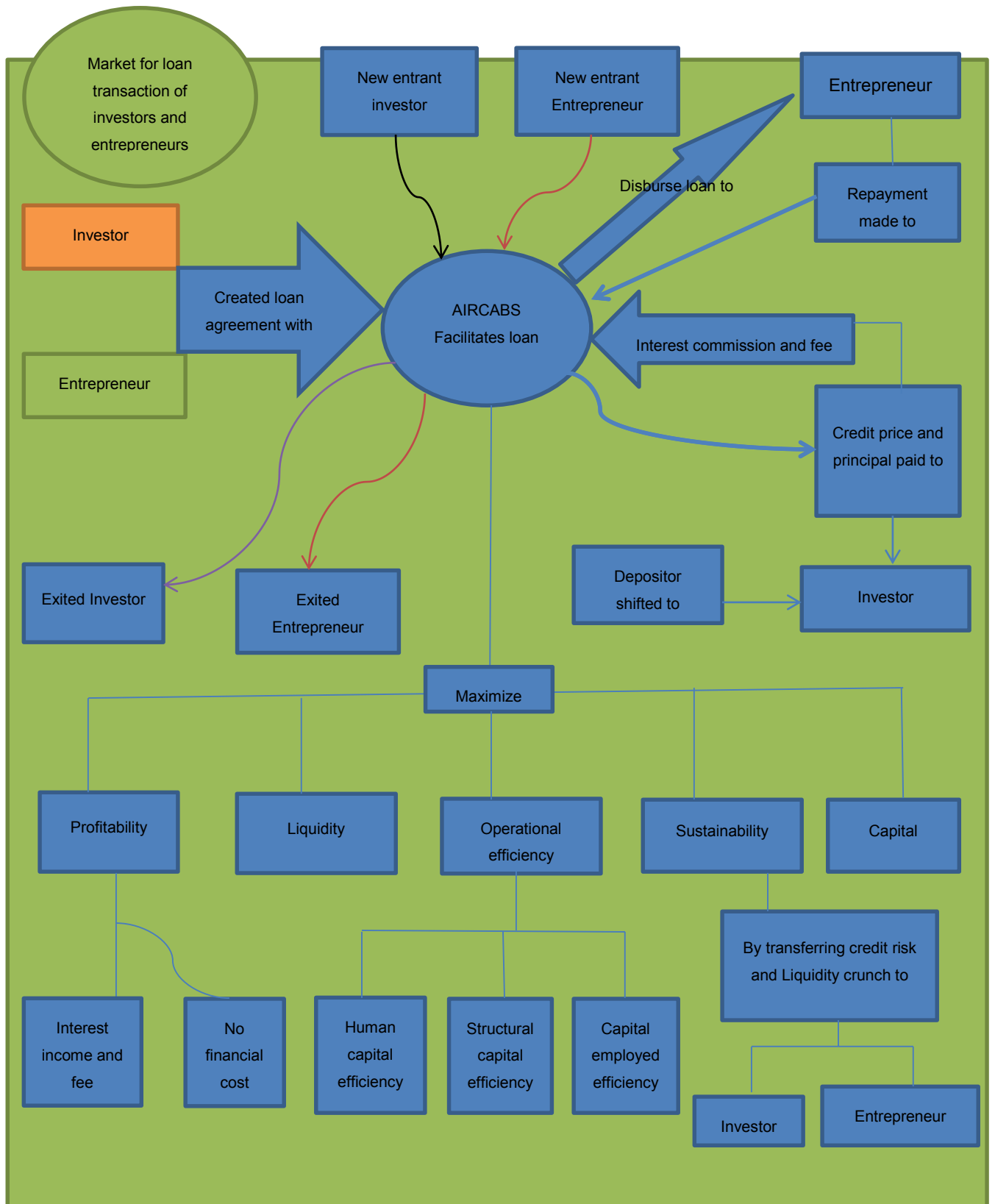


Figure 3.4: AIRCABS Model

Source: Author

AIRCABS model depicted in figure 3.4 details how an agent bank processes investors loan funding and administers the loan after disbursement to generate non-interest income. This is done while investors and entrepreneurs are present at their selected agent bank to transact a loan with or without pledging the entrepreneurs' collateral. The two parties present their documents and the agent bank assesses the investors and entrepreneurs' credit credentials along with the feasibility report of the entrepreneurs' project. These documents are all included in the loan contract, which is signed by the investor, entrepreneur and the agent bank set out the responsibility, benefit and obligation of all parties from loan inception to settlement.

The early withdrawal of investors is handled by an agent bank by selling the loan to the new entrant investor to maintain the disbursed loan collection until loan settlement. An agent bank considers the loan to sell when it receives the investor's withdrawal request. The agent bank then calculates its cost and benefit and levies a one-time fee that would be deducted from loan refund of exiting investors. The agent bank's loan selling process must be confidential between the investor and agent bank, but after the loan has been sold, the agent bank informs the entrepreneur to amend the loan contract without further interest rate and other service price amendment to avoid any moral hazard of the debtor. The agent bank provides management support to the entrepreneur based on his/her business activities to progressively increase the project earning. The management support of the agent bank to an entrepreneur could be on how to handle the business efficiently to avoid credit risk that the project might incur through its business life and to increase its revenue to get consistent loan collection.

After a strong effort by the agent bank, the entrepreneur might fail repaying the loan obligation and this poses a credit risk to investors. In this case, the agent bank periodically assesses the credit risk of the entrepreneur to prepare a new entrant entrepreneur to handle the business of the exiting entrepreneur's project without ownership transfer until the loan settlement.

The agent bank collects interest rate commission by selling its services to handle investors' loan funding to entrepreneurs. Since the agent bank's interest rate commission is based on the investor loan funding credit price, the agent bank's income is not affected by volatility of the market interest rate. Once the agent bank establishes its contractual agreement with investors and entrepreneurs, the agent bank opens the account for the loan transaction to effect the loan disbursement from the investor's account into the entrepreneur's account and collects the loan

repayment in the loan period from the entrepreneurs into the investors' account. As fund providers increase, the agent bank mobilises more loan and stable deposits. Till the investor loan fund is disbursed to an entrepreneur, the fund is held in a deposit account at the bank, which adopted an interest rate commission agent bank model. So, applying discrete interest rate incentive for the agreed deposit period the bank uses it for its own trading/investment activities. A depositor who has been collecting deposit interest rate on fund already invested by the bank can shift to investor position to collect proportional credit price instead of deposit interest rate.

Unless the bank needs to hold and disburse the fund for its own investment purpose the interest rate that is applied to the deposited money ceases immediately after the fund holder gives consent to the bank to disburse the deposited amount for an entrepreneur. This is done when the bank moves to agent position to administer investor loan funding and the depositor moves to investor position. Thus, the agent bank continues administering the disbursed loan on behalf of the investor. Since the fund is disbursed from investors, the change in interest rate does not have an impact on the commission agent bank's profitability.

Though traditional banks depend on their product advertisement, investors and entrepreneurs are the main promoters of AIRCABS. By using this banking system, banks are enabled to mobilise more stable funds in the customer deposit accounts and thereby enhances advancing credit to entrepreneurs, which in turn increases investment. In order to have a more resilient banking sector in the economy, banks need more stable funds to have confirmed credit without having liquidity risk. Basel III states that creating additional incentives into depositors' accounts reinforces the stability of a customer's deposit at the originating bank. This in turn encourages the application of a discrete market deposit interest incentive into the depositor account, which enables the bank to mobilise more stable deposit.

Applying a discrete market deposit interest rate incentive per the bank's paying capacity on potential depositors' accounts according to the range of deposit volume, length of period and nature of deposit enables the bank to have more depositors from the formal and informal economy. Since the deposit interest incentive rate is an arbitrary percentage, it can be adjusted according to the volume of deposit and the bank deposit interest paying capacity. Applying discrete market deposit interest rate on the customer's account reduces the gap between the

informal and formal financial system, and improves the bank's profitability and liquidity to enhance investments.

Toxic assets and contagion start when the bank grants long-term loans based on short-term deposits. The agent bank avoids credit and liquidity risks by transferring them to investors and entrepreneurs thereby enhancing its sustainability in the market. Applying AIRCABS develops a culture of lending, borrowing and saving as mutual benefit to the investor, entrepreneur and the bank.

Banks can avoid toxic or non-performing asset or contagion and liquidity problems permanently by transferring credit and liquidity risks to the investor and entrepreneur. After the agent bank disburses a loan to the entrepreneur, directly using stable deposit, money depositors at the bank have a right to receive the credit price rather than getting the deposit interest rate. In such case, the bank shifts from creditor position to an interest rate commission agent banking position while the depositor moves to the investor position.

An interest rate commission agent banking business model holds mutual benefit for investors, entrepreneurs, depositors and the agent bank. Since the model works with other banking business models according to the organisation's incentive, structure, culture and skill of the employees, it protects the bank and fund provider from windfall and permanent banking risks where other business models fail. Since the agent bank collects interest rate commission up to loan settlement, its commission income is uninterrupted without holding the depositor's fund as its own asset on the balance sheet to enhance the agent bank's sustainability in the market.

AIRCABS must use efficient technology, human capital and finance. This will help to avoid operational risk and credit risk of an investor. The main target of an interest rate commission agent banking system is to transfer credit risk and liquidity crunch to the investor and entrepreneur and thereby improves profitability, liquidity, sustainability, efficiency and capital. The agent bank profitability increases as the agent bank's interest rate commission and fee collection as a return on investor loan administration increase. Since the loan transaction between investors and entrepreneurs is liberal, channelling the loan transaction process through an agent bank according to the will of the investor and entrepreneur improves the level of liquidity at the agent bank. This can be done by giving alternative investment opportunity to depositors to exercise their full right on their money deposited to give them a credit price for saving interest rate with

the bank as an agent to administer their money already invested on selected project by the bank. As the agent bank is involved in interest rate commission and fee collection activities, the operational efficiency of the agent bank handles more clientele in need of loans. In order to improve its operational efficiency, the agent bank has to be efficient in capital employed, human capital and structural capital. Since the agent bank does not hold customer deposits as its own asset on the balance sheet, the bank profit from interest commission and fee increases the bank capital. Transferring credit risk and liquidity crunch to the investor and entrepreneur increases the agent bank's sustainability.

The market for loan transaction can be capital market or money market according to the loan period fixed in the loan contract that was signed by the investor, entrepreneur and the agent bank. If the loan period stated in the loan contract is less than a year, the agent bank sells the loan, which an investor requests to withdraw, in the loan period in the money market without issuing security. Instead of issuing financial securities the agent bank amends the loan contract by including a new entrant investor. If the loan period in the loan contract is more than a year, the agent bank sells the loan in the capital market without issuing securities, but amending the loan contract by including the new entrant investor. The loan transaction market can finance national and international trade. Commercial finance is available for a trader through AIRCABS. A loan transaction market helps the industry in securing short-term as well as long-term loans. Loan transaction market enables the agent bank to be highly liquid. The bank that runs an interest rate commission agent bank as one unit of the bank uses profit of the agent bank in highly profitable investment using money market or capital market. The loan interest rate set in the loan contract by agreement of the agent bank, investor and entrepreneur serves the central bank as an indicator of monetary and banking condition in a country. The loan transaction market therefore enables the central bank to engrave appropriate banking policy and implement its policy.

3.3. DETERMINANTS OF AN INTEREST RATE COMMISSION AGENT BANK

An increase in financial service provision as a result of more liquid money shows financial deepening. The development of financial service is the result of the bank's sustainability and profitability. Lower financial activity reduces the banking access to funds and results in high funding cost, which reduces bank profitability and sustainability. Whereas, the increment of

financial activity indicates an increase in liquidity and thereby enhances an interest rate commission agent banks' profitability and sustainability.

The growth of saving and investment helps capital formation and re-investment and determines growth in national income.

Per capita measures the income per person which is defined as resource divided by total population. As the income of the population increases the capacity to invest cash using an agent bank also increases.

The excess of gross domestic saving over consumption by government and the private sector is defined as total domestic saving. As total domestic saving increases the country's capacity in domestic investment improves and thereby the agent bank's profitability and sustainability also improves.

Total gross domestic investment in domestic production using private business capital is defined as gross private domestic investment. The growth in domestic investment could run funding through AIRCABS. As the gross private domestic investment increased, the private investment increased and thereby increased the profitability of AIRCABS.

Management efficiency is the expenses incurred to earn 1US dollar interest rate commission. This indicates how much money the bank invests to earn 1US dollar profit. As the agent bank becomes more efficient in handling investor's loan funding administration, the agent bank's sustainability and profitability increases.

Though the agent bank depended on the market deposit interest rate to pay discrete market deposit interest incentive, the increase in deposit interest increases the funding cost of the bank till the depositors convert to investor position to receive proportional credit price in terms of deposit interest rate.

The efficiency of deposit utilisation is defined as interest expense incurred to get 1US dollar loan interest rate. This motivates depositors to move to investor position to receive proportional credit price in terms of deposit interest and accept the agent's bank risk burden.

The capacity of the bank to pay the deposit interest incentive is the bank solvency to pay discrete market deposit interest incentive and collect stable deposits, which can be used for trading activities or loan advances.

The agent bank's interest rate commission depends on the number of investor loan funding and bank efficiency to administer the loan after disbursement. As the bank efficiency to administer the investor loan funding to the entrepreneur decreases, loan funding also decreases.

An interest rate commission agent bank generates non-interest income using its fixed asset and human capital. As the agent bank uses cutting edge technology and approach to render its service to its customer, the bank's interest rate commission is generated from its increased fixed assets. AIRCABS transfers credit risk to investors and entrepreneurs and increases in capital adequacy indicates the efficiency of the bank to enhance its stability and profitability.

Investor loan funding therefore demand of depositors to move to investor position, the credit price of the investor loan funding, the demand and supply of loan in the market, and informal financial sectors are the determinants of an agent bank's interest rate commission.

3.4. ACCOUNTING ENTRIES TREATMENT OF AIRCABS

An interest rate commission agent bank administers money deposits as an agent of the depositor on condition that the depositor establishes any investment agreement with an agent bank within the deposit period to collect proportionate credit price in terms of the deposit interest rate from the project that the bank has already invested funds. Similarly, an interest rate commission agent bank executes a special agreement with the fund holder to lend the fund to an entrepreneur as agent of the investor loan funding.

An interest rate commission agent bank uses double accounting entries to effect the loan disbursement from an investor account into an entrepreneur's account and to collect the loan repayment from the entrepreneur into the investor's account. After contractual agreement has been established among investor, entrepreneur and the agent bank, the agent bank opened accounts for the investor and entrepreneur for the purpose of the loan transaction. Since the agent bank does not hold an investor deposit as its own asset on its balance sheet, the agent bank establishes an off-balance sheet loan transaction recording for loan management and follow-up purposes.

3.4.1. The bank accounting entries due to a business transaction

Once the bank becomes an agent for investor loan funding, all loan transactions are carried out through the investor and entrepreneur account opened at the agent bank and the loan is followed

up and the administration is effected through on off-balance sheet loan transaction recording ledger. The agent bank creates the name of the ledger in its chart of accounts that is summarised to pass batch transaction to the general ledger as an off-balance sheet. Since the balance sheet does not contain customer deposits as an asset, the loan transaction from inception to settlement is completed on the liability side of the balance sheet. The summary of the loan transaction is done on the special account of investors and entrepreneurs, separately stated on the liability side of the agent bank's balance sheet. Because the loan transaction trades off completed on the liability side of the agent bank's balance sheet, the size of the agent bank balance sheet does not show growth.

To control the loan transaction, the loan disbursement and repayment recording are maintained on the off-balance sheet using a double accounting entry system (Appendix G).

3.4.2. Internal auditing and risk management duties

The purpose of an internal audit is to support management oversight to increase the bank's wealth maximisation and sustainability. The internal auditor follows the accounting entries by regularly testing the accounting and periodically reporting the finding to the management team who then works on it with the risk management process of the bank. The main duty of the auditor is to verify documents collected by the bank from the investor and entrepreneur and to follow prudent accounting process checking to avoid accounting entanglement that follows from operational errors. The audit preparation starts at offsite auditing, which is carried out at the audit process office by collecting the auditee's document to have 50% perception of the subject that would be investigated. The second auditing is carried out onsite auditing to complete the auditing process using the full sample document or documents to have a sufficient sample to determine the risk related to the audited operation. Though, the internal audit works for the bank to clear operational error on the bank accounting system, their output is an input for the risk management process.

The risk management process periodically uses scientific forecasting techniques to assess the investor and entrepreneur risks, such as credit risk, interest rate risk, operational risk, and market risk in depth in order to inform the agent bank, inventor and entrepreneur before an entrepreneur fails. In order to increase risk forecasting accuracy, the risk management professional should have an intimate knowledge of changeable market rules and activities.

3.4.3. Pros and cons of 360-, 180- and 90-degrees lending strategies of the agent bank

In order to simplify the implementation of AIRCABS, the pros and cons of 360-, 180- and 90-degrees lending strategies of the agent bank are identified as follows:

3.4.3.1. *Pros of a 360-degrees lending strategy of the agent bank:*

- The prior acquaintance between the investor and entrepreneur helps the bank to have more business insight about the entrepreneur and this simplifies the bank's administration of investor loan funding to the entrepreneur.
- The strategy encourages investors and entrepreneurs to enter the banking system.
- The cost of bank advertisement is radically reduced.
- The bank collects interest rate commission until loan advanced to the entrepreneur is fully settled.
- The agent bank does not pay any deposit interest rate on the fund disbursed from the investor account, even though in traditional banking deposit interest is calculated on the current balance on the depositors' accounts till the deposit account is settled.
- When the original investor wants to withdraw, the agent bank replaces the investor by a new entrant investor reimbursing the current balance to the original investor. Should an entrepreneur fail to pay the loan regularly, the agent bank rents the entrepreneur's project to a new entrant entrepreneur without ownership transfer. When the agent bank approves the investor's withdrawal request from loan transaction process, it calculates all relevant administration expenses and commission from reimbursed amount to withdrawing investor.
- The bank no longer has funding problems.
- Credit, systematic and liquidity risks will be removed.

3.4.3.2. *Cons of 360-degrees lending strategy of agent bank*

- The strategy requires highly skilled personnel to manage investor loan funding risk and entrepreneur business.
- If administrative cost is not measured appropriately, the bank administration cost might not be controllable.

3.4.3.3. *Pros of 180-degrees lending strategy of agent bank*

- The strategy enables the agent bank to reply to the loan request of an entrepreneur at any time.
- Till the loan is disbursed to an entrepreneur, the bank that run AIRCABS as one unit of the bank uses the deposit fund for its own trading or investment by paying discrete market deposit interest rate incentive on the deposited amount.
- The agent bank stops calculating deposit interest rate on the fund disbursed to an entrepreneur.
- The strategy encourages investors and entrepreneurs to get into the formal banking system.
- It increases the agent bank's project selection fee.
- The bank mitigates credit, systematic and liquidity risk.

3.4.3.4. *Cons of 180-degrees lending strategy of agent bank*

- Because the entrepreneur and investors do not know to each other, the bank's administrative cost might increase.

3.4.3.5. *Pros of 90-degrees lending strategy of the agent bank*

- The bank mobilises a more stable deposit.
- The bank can finance more loans.
- In line with the depositors' demand, the depositor finances loan to the entrepreneur so that the bank collects interest rate commission and the depositor collects credit price, instead of deposit interest rate.
- The bank simultaneously meet dual targets because deposits and loans are mobilised at the same time.
- The bank mitigates credit, systematic and liquidity risks.
- The bank calculates deposit interest based on the minimum balance, when the depositor shifts to an investor position, the credit price is calculated on the remaining balance of the loan.
- When the depositor requests the bank to lend the deposited money to the entrepreneur in the deposit period, the bank transfers proportionate credit price to the

depositor instead of paying deposit interest into the depositor account and the bank becomes the agent bank for the investor to administer proportionate funds that are already invested in a project.

3.4.3.6. *Cons of 90-degrees lending strategy of the agent bank*

- Since the initial target of depositor was to get an interest rate from deposit account the bank expects high financial cost.

3.5. PILLARS OF AIRCABS

An interest rate commission agent banking business model is designed to enhance bank profitability and sustainability by transferring credit and liquidity risks to investors and entrepreneurs and administers investor fund disbursed to entrepreneurs to collect interest rate commission and project selection fee.

An interest rate commission agent banking system stands on the following three pillars:

- Efficiency
- Profitability and sustainability
- Risk transfer

The three pillars of the system are depicted in figure 3.5

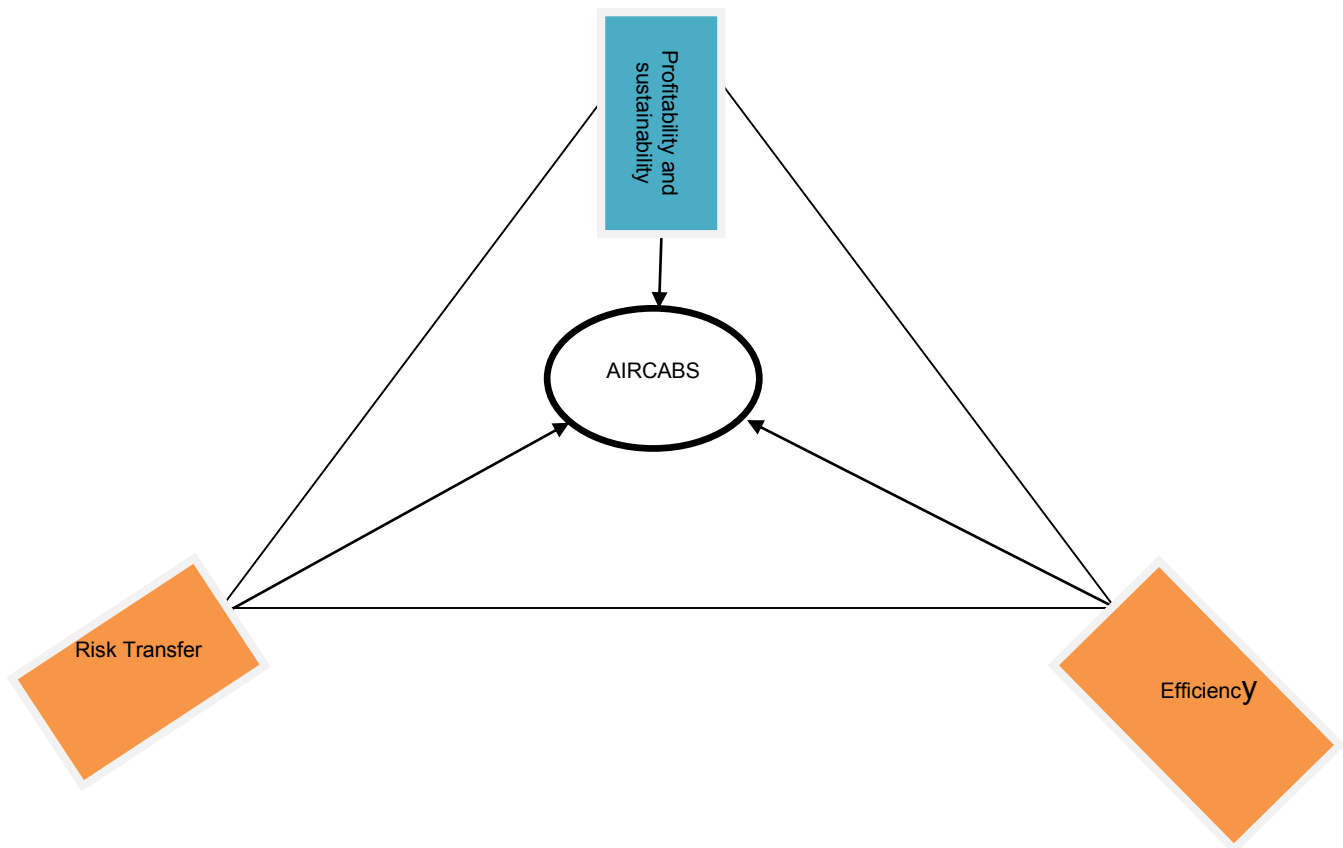


Figure 3.5: Pillars of AIRCABS

3.5.1. Efficiency

AIRCABS is equipped with highly efficient service and cutting edge risk predicting and managing professionals to improve the effectiveness of the target business. Though the agent bank collected interest rate commission from the investors' credit price until loan settlement, it is expected that the agent bank should be an efficient in loan administration after disbursement from investor to entrepreneur to get loan settled within time stated in the loan contract. Non-interest income under the conventional banking system is more volatile than interest income. To generate non-interest income from daily banking business the bank must be more efficient in service rendering and strategic advantage. As the bank income generating activities from non-interest income increases, the bank efficiency on service rendering improves (Van der Westhuizen, 2010).

Therefore, an interest rate commission agent bank has to be more efficient in technology, financial and human capital. Applying inadequate technology and human capital will most likely expose the agent bank to operational risk.

3.5.2. Profitability and sustainability

AIRCABS increases profitability and sustainability by ceasing financial expense calculated on fund disbursed from investor to entrepreneur account. In traditional banking system, banks collect deposits from depositors and disburse it to borrowers and receive non-volatile interest income. The bank does not get any interest income from bad loans or toxic assets even though it pays deposit interest indefinitely into depositors' account, on the fund utilised by bank. This makes banks suffer from hidden financial expenses which they cannot recover. This problem alleviated by applying AIRCABS.

The agent bank maximises commission income and fee from the investor in return for administering the loan after disbursement. The agent bank collects interest rate commission from agreed investor loan funding credit price until the loan has settled by transferring credit and liquidity risks to the investor and entrepreneur and maximises profitability, sustainability, operational efficiency, liquidity and capital.

3.5.3. Risk transferring

An interest rate commission agent bank administers investor loan funding to an entrepreneur by keeping the loan on the off-balance sheet. The loan transaction is carried out on the liability side of the agent bank balance sheet on an investor and entrepreneur's accounts and followed up in the loan ledger maintained on the off-balance sheet of the bank. Since the agent bank efficiently administers the loan after disbursement, no credit and liquidity risks affect the agent banking business. Keeping other factors constant, for this research study commodity price shock and borrowers' failure result in credit risk whereas deposit run and credit crunch result in a liquidity crunch. However, AIRCABS transfers credit and liquidity risks to the inventor and entrepreneur to maintain its sustainability and profitability in the market.

3.6. LIMITATIONS ON THE BANK TO IMPLEMENT AIRCABS

When implementing this system, banks may have the following limitations:

- The banking market in developing countries could be a challenge for investors, entrepreneurs and the bank.
- A lack of awareness of banking activities challenges the loan process and administration.
- Transactions between the investor and entrepreneur are subject to central bank control, which limits the loan market.
- The loan, after disbursement, needs stringent administration with perfect knowledge of the entrepreneur's business and dynamic changes in the market.
- Banks in developing countries may not have specialised personnel with the right skills for the types of risks in the entrepreneurial business.

3.7. APPLICABILITY OF BANKING LAW TO AN AGENT BANK FOR INVESTOR LOAN FUNDING

Banks are defined as any establishment authorised by law to engage in the business of banking, such as accepting deposits, advancing loans, granting overdraft facilities, discounting bills of exchange, providing agency, trustee and general utility services (Brady, 1915).

With a legal binding agreement between the bank and customer for deposits to be allotted for customer- specified purposes, deposits change to investment funds (Geva, 2012). Deposits accepted by the bank have a general or specific purpose.

The money that the bank accepts for deposits creates a debtor-creditor relationship between the banker and depositor. In this case, the depositor can withdraw money from the deposit account at any time. Whereas, funds deposited for special purposes create an agent-owner relationship between the bank and customer. Based on the agreement between the bank and customer, the money deposited in the bank could be for a special or particular purpose of the customer, which may be to pay the deposited money on behalf of the depositor to a third person on condition that the payee meets the agreements and presents all required documents. Because the bank holds the deposits as an agent of the depositor, the depositor can establish any investment agreement with agent bank thereon (Bassett v. City Bank Trust Co, 115 Conn. 1 (Conn 1932)). Similarly, an interest rate commission agent bank will execute a special agreement with fund holders to lend funds to an entrepreneur as the agent of a fund holder. The customer who benefits from a discrete market interest rate from a bank can transfer funds to a special deposit to lend to an

entrepreneur with the bank as an agent. When the customer cannot withdraw money (fixed term deposit) deposited at the bank for a general purpose at any time, the bank can use it for its own investment to receive interest income. This avoids the asset liability mismatch that banks face.

In order to solve historical banking problems AIRCABS can be applied based on current banking law.

3.8. CREDIT RISK AND LIQUIDITY CRUNCH TRANSFERRING MECHANISM

Disbursing loan holding customer deposits as an asset exposes the banking business to credit risk and liquidity crunch. To solve the banking crisis that arise from credit risk and liquidity crunch, business models adopted by banks are a catalyst for financial crisis (Blommestein, Keskinler & Lucas, 2011; Zuckerman, 2011; Baicu & State, 2012; Bruno & Bedendo, 2013; Mandel, Morgan & Wei, 2012; Young, McCord & Crowford, 2010). Because a bank runs its business either to retain or transfer credit and liquidity risks to other financial institutions, this has the same impact on the overall industry.

Transferring credit and liquidity risks to entrepreneurs and investors enables the banks to maintain sustainability and profitability in the market. This can be done by empowering money depositors to exercise their full right for the use of their money to get reasonable credit price, rather than offering an unreasonable deposit interest rate that forces them to join the informal market (Simon-oak & Jolaosho, 2013). Transferring credit risk using financial instruments such as derivatives aggravates financial crisis (Gogoncea & Paun, 2013). The main reason is that banks disburse loans considering customers' deposit as their own asset on their balance sheet.

To maintain the mutual benefit of investor, entrepreneur and the bank, AIRCABS was developed (Tessema & Kruger, 2015 and 2016). This banking system is defined as a system adopted by the bank to be an agent for investor loan funding to entrepreneurs by facilitating the fund seller and buyer agreement to administer the loan after disbursement by retaining reasonable interest rate commission from the agreed investors' loan funding credit price (Tessema & Kruger, 2015 and 2016). Since the agent bank does not hold customer deposits as an asset, it is exempted from expensing deposit interest. Therefore, the agent banks collect interest commission from the investor loan administration without credit and liquidity risks. When investors and entrepreneurs present at the agent bank to process a loan transaction, the selected agent bank assesses the entrepreneur's project in accordance with the central bank's rules and regulations.

The agent bank then makes them sign a tripartite loan contract agreement (investor, entrepreneur and also the agent bank itself). Investor and entrepreneur open a special deposit account to facilitate the loan transaction from an investor account to entrepreneur account. The agent bank administers the loan after disbursement by maintaining it on the off-balance sheet in the loan accounting period. When the entrepreneur periodically repays the portion of interest and principal, the agent bank transfers the repayment into the investor account and collects the agreed interest rate commission, as stated in the loan contract. The investor thus has an opportunity to collect the money sold to entrepreneur, duly or in lump sums according to the agreement. The investor collects its benefit throughout the loan period without waiting till the bank accounting period when its profit and loss is disclosed. This enables an investor to mitigate risks related to credit and liquidity risks. The agent bank also mitigates investor and entrepreneurs' risks related to credit and liquidity by maintaining operational efficiency through enhanced human capital efficiency, structural capital efficiency and capital employed efficiency (Tessema & Kruger, 2016).

3.8.1. Credit and liquidity risks transfer mechanism of AIRCABS

This banking system improves profitability, sustainability, operational efficiency, liquidity and capital by transferring credit risk and liquidity crunch to investors and entrepreneurs. AIRCABS must be more efficient in technology, human capital and finance. Applying inadequate technology and human capital most likely exposes the agent bank to operational risk (Tessema & Kruger, 2016). In a modern banking system risk can be transferred to borrowers either by selling pledged collateral or by buying insurance through credit default swap. In bank credit risk transferring, the insurance company gives insurance coverage for loans under the administration of a bank. Under conventional banking credit risk transfer therefore only improves risk diversification if the risk transfer is between a bank and the insurance sectors. However, credit risk transfer can bring contagion to the institutions where the transaction is carried out, which in turn increases the systematic risk for market participants and later impacts the whole economy (Allen & Carletti, 2006).

Since credit risk depends on the borrower's internal and external factors such as failure to administer bank loan, commodity price and market price inflation before starting business, credit risk is not entirely manageable in the conventional banking system. However, credit risk and

liquidity crunch are managed by AIRCABS, which transfers credit and liquidity risks to entrepreneurs and investors to receive an interest rate commission and fees. AIRCABS must develop three lending strategies, 360-degrees, 180-degrees and 90-degrees lending strategies (Tessema & Kruger, 2015 and 2016).

The lending strategies shift credit risk and liquidity crunch to investors and entrepreneurs and thereby improve the agent bank's profitability and sustainability. Transferring credit risk to non-bank parties enables to establish a more stable financial sector than transferring credit risk within the banking sector (Wagner & Marsh, 2006). The agent bank (AIRCAB) does not hold disbursed funds as an asset to not pay deposit interest expense on the funds disbursed. The following diagram depicts the process of AIRCABS credit risk transfer mechanism.



Figure 3.6: ARCABS risk transfer mechanism

Source: *Author*

As depicted in figure 3.6, AIRCABS is designed to transfer credit risk and liquidity crunch to investors and entrepreneurs to improve profitability and sustainability. In a 360-degrees lending strategy, the investor and entrepreneur are known to each other and optionally an entrepreneur pledges collateral. However, if the entrepreneur defaults, the agent bank (AIRCABS) of an investor would search for an entrepreneur that has the same project interest and rents the project till the loan has settled without ownership transfer, which can be made by an ultimate decision of the investor and the agent bank. Because of some internal and external factors, an investor that has already invested funds in an entrepreneurial project may want to withdraw prematurely. In this case, the agent bank sells the project to a new entrant investor, who has the same project interest, refunding the loan balance to the former investor. The agent bank administers the loan disbursed to an entrepreneur till the loan is settled and collects interest rate commission and additional service fee from investors by transferring the credit risk to newly entrant investors.

Investors who have sufficient funds and wish to invest funds in an alternative investment advise the agent bank on how to place his/her fund into an investment. In this case, in an 180-degrees lending strategy, the agent bank can select a feasible project from those entrepreneurs who applied for funds at the agent bank or can select from the market that meets the investor's interest. Since the investor and entrepreneur are not acquainted, pledging collateral by the entrepreneur is mandatory. The collateral may be the project under investment or another asset. The collateral pledged against the loan disbursed from an investor's account should have a safe margin rate between 91% and 100% for a 90% loan on the collateral value, unless an entrepreneur covers the remaining more than or equal to 10% safe margin by buying insurance from an insurance company. The insurance company may cover the default amount beyond the original loan balance or according to the agreement between the entrepreneur and the insurance company. Here the agent bank may not advise the entrepreneur to buy insurance coverage for loan repayment but rather manage the loan to get paid in due time as specified in the loan contract. Otherwise, if an entrepreneur fails to pay the debt obligation above 100% of the collateral value, the agent bank would auction the collateral together with the project under investment and is obliged to collect the fund disbursed together with the interest accrued to reimburse the remaining unpaid balance to the investor and its uncollected interest rate commission and additional administrative expense.

The agent bank sells the pledged collateral when no alternative investment solution can be found. However, the main target of the agent bank is to benefit the investor and the entrepreneur by mitigating the risk related to the entrepreneur business. Therefore, the agent bank rents the project of the entrepreneur to new entrant entrepreneur who has the same project interest. This continues till the loan is settled, holding the collateral and without ownership transfer. Here the benefit of the new entrant entrepreneur is that the business runs with the support of the entrepreneur's own fund paying rent, which is equal or greater than the current loan repayment, with a fully-fledged facility and collects business profit beyond loan repayment to the investor. The exiting entrepreneur does not lose his/her property since the property will be returned after the loan has been settled by the new entrant entrepreneur. The rent of the exiting entrepreneur project calculated based on loan to total asset. If the loan to total asset ratio calculated is greater than 100%, the rent would be higher than the current loan repayment. If the loan to total asset ratio is less than 100%, the rent could be equal or greater than the loan repayment to settle the loan in due date. Here the agent bank transfers the credit risk of an investor and entrepreneurs to newly entrant entrepreneurs.

In a 90-degrees lending strategy, the depositor who wishes to be an investor in the deposit periods consults with the bank that already invested the depositor's fund in a selective project. The bank shifts to agent position after a formal agreement is made between the investor and the agent bank for the portion of funds invested. The agent bank stops calculating deposit interest and the newly entrant investor benefits proportional credit price according to the fund considered in the total fund that is already disbursed by the bank to the debtor and thereby the agent bank collects a proportional interest rate commission from the investor credit price. This can be done because AIRCABS can be a unit of a bank that runs under a conventional banking system. The loan already disbursed to a debtor is covered by insurance and pledged collateral. Therefore, when the depositor moves to an investor position in the deposit period, the credit risk of an investor transfers to the fate of collateral pledged and insurance engaged by an entrepreneur.

An interest rate commission agent bank can therefore transfer credit risk by

- selling loans to new entrant investors,
- renting the project to new entrant entrepreneurs,
- selling collateral, and

- getting loan repayment insurance coverage.

Since the agent bank does not hold customer deposits as an asset on its balance sheet, it is not affected by market and credit risks. Furthermore, the agent bank is equipped with cutting edge risk predictor employees who devote their capacity to lay off credit risk of investors and entrepreneurs.

3.9. COLLATERAL PLEDGED BETWEEN PARTIES

Depending on the fund holder and entrepreneur, the loan may be with or without collateral with the following conditions:

- If the agreement between the fund provider and the entrepreneur does not include pledged collateral, the project under investment will be held as collateral. Bank credit risk is thus transferred to the entrepreneur and fund provider.
- If the property of the entrepreneur, which pledged as collateral, is used by the fund provider, the credit risk is transferred to the fund provider and the bank will claim its administrative cost and service charge from the fund provider in case the entrepreneur fails to pay the debt.
- If the fund provider inherited the money and the entrepreneur is one of the inheritors, the collateral depends on their agreement and the bank's share in the loan interest rate is considered through loan repayment. Otherwise, bank claims its expenses from the fund provider by selling the project financing and the credit risk is transferred to the fund provider and entrepreneur.
- If an entrepreneur holds bonds or other types of certified bank securities, the collateral can be these securities and the fund provider can be the principal lender to the entrepreneur. If the borrower defaults in between, the bank will claim its administrative expense and agreed commission by selling the bond/securities to third parties.
- If the fund provider presents as an entrepreneur to borrow from bank double of his/her deposited amount in a bank account, having sold the fund on hand to the bank as collateral, the fund sold earlier to the bank will be returned to the fund provider after the loan has settled. Here the bank and fund provider will have an interest rate agreement at which both parties are willing to buy/sell the fund. The entrepreneur pays a credit price on the loan fund which disbursed against deposited amount which

held as collateral and the bank can also collect its administrative cost and service charge on the total loan disbursed through repayment or through foreclosing the project under investment should the borrower default. If the fund holder wishes to sell the fund to invest or to buy movable /fixed asset, the collateral of the fund holder and the bank will be the movable/fixed asset.

- If depositors wish to lend to entrepreneurs for day to day transaction, such as bank transfer or purchase of goods and services, the bank will limit the loan according to the entrepreneurs' collateral value
- All fixed assets considered as collateral shall have insurance coverage to settle the loan against accidental damage of the property.

3.10. MODE OF LOAN REPAYMENT

The loan repayment set by the bank begins with small amounts, increasing gradually according to the performance of the business of the entrepreneur or annuity mode of payment. Setting the loan repayment in such a way mitigates the risk of the bank and the fund supplier from failure of the entrepreneur at the beginning of the project before business starts to generate cash inflow. Since the repayments grow gradually, the entrepreneur will be encouraged to expand the business product horizontally or vertically.

3.11. DEPOSIT MOBILISATION STRATEGY

The deposit mobilisation strategy could be based on the interest rate that the fund provider is willing to rent the fund and the bank is willing to use it. Since the bank, as mediator, is depended on the funds collected from the society to make it available to entrepreneurs through loans, creating progressive discrete market deposit interest rate incentive beyond the market on specific accounts will increase volume of deposits. The deposit interest rate for the depositor set by the bank is assumed to cover the transportation fare; cost of time and their energy expended to deposit the money into their bank account. Since the interest rate set by the bank is small, the poor and non-financial organs prefer to consume now rather than saving money for future consumption. This explains the high unbanked rate because of small bank deposit interest rate. Traditional banking uses the same products, focusing on service specialisation only. Competing based on service quality only is the only competitive advantage and this will not increase investment, unless compatible funds are deposited in a bank to make it available for investment.

The only way that banks can currently increase deposits is by providing a variety of interest rates to the depositor to enhance the stability of the funds and avoid liquidity risk. The variety of deposit interest rates of the bank depend on the nature, volume and length of the deposit negotiated with the fund holder. Accordingly, the bank will have a variety of deposit products with a variety of interest rates, which will be available to the entrepreneur depending on the volume and period of the loan by matching with the nature of deposits available to the bank. The negotiated deposit in a bank can be arranged for the period of one year, three years, five years and so forth to align it with the loan request for the period of the asymmetric asset of the bank with liability on the balance sheet.

Though, the period can be set by agreement between the bank and depositors for a substantial deposit amount with interest rate structure, this kind of deposit can be an ordinary deposit whose stability can be ensured by adding interest incentive. The incentive rate is an arbitrary percentage, which applies to what the depositor would have received from the period's one-dollar deposited balance, the principal one dollar deposited, and the period's accrued interest calculated thereon. This incentive rate can depend on the bank paying capacity, liquidity requirement of the bank and is recommended to be less than the prevailing deposit interest rate (Tessema, 2011). The total of the incentive rate and the market rate shall be less than the minimum credit price of the bank. Since the deposit interest rate incentive, which applies on one dollar deposit balance, can be any percentage that the bank agrees to apply on the period's one dollar deposited amount, the bank can increase or decrease the interest rate incentive periodically adjusting the incentive rate.

While determining the incentive rate, banks consider the inflation rate, the credit price, the bank volume of deposit, demand of credit and the interest of the unbanked population. The total of interest rate and interest incentive shall be below the credit price for loans granted to prospective customers.

The negotiation of the bank on a deposit interest rate for the use of money will depend on the following conditions:

- **Period of deposit**

The period of the deposit is the length of time the bank and the depositors agree to deposit at an agreed interest rate. The period can be categorised as per the bank liquidity ladder such that the period could be up to one, three, six, twelve and more than twelve months.

- **The volume of deposit**

The volume of the deposit is ranged by the bank in order to pay progressive discrete interest rate incentive into depositors' accounts. Accordingly, as the volume of deposit increases, the bank's discrete market interest incentive for deposits increases. Depending on the volume of money in the account, the depositor can negotiate with the bank to lend it to the entrepreneur who presents a feasible project proposal. The fund provider can therefore lend the deposit in the account to an entrepreneur and can work together with the agent bank collecting the principal loan repayment with the credit price excess above the bank interest rate commission. The fund provider can lend to the bank with a negotiable loan interest rate if the bank approaches the fund providers to borrow funds for urgent business operation requirements, for capital expenditure and for the purchase of hard currency for international trade settlement with negotiable or a prevailing interest rate based on the volume of deposit.

- **The deposit for kinds of future projects**

Depending on the kind of future project the depositor will enter into, a contract with the bank will be entered into until the deposit reaches one fourth of the fund required for the project. Having ascertained the required deposit placed in the depositor's account, the bank will coordinate liaison between the fund provider and the entrepreneur at the same bank to lend three fourths of the remaining amount. The bank will therefore work as an agent for the fund provider, which later shares the loan interest rate as per their agreement. Since the fund provider and the bank work for mutual benefit, the deposit amount will not be withdrawn before maturity and as a result the stability of the fund will be enhanced.

- **Retail deposit**

This deposit is any kind of deposit above, or some portion of, the current consumption. The depositor of such kind of deposit may not have interest to work with the bank, but the bank can use it as a stable funding source by paying an interest incentive into the depositor's accounts.

The depositor may have various purposes for their fund and if the depositors' need arises to withdraw the total deposited amount, the fund withdrawal can be done by giving notice to the bank some days ahead. The bank will then pay the depositor a prorated interest rate but forfeiting interest incentive according to the agreement between the bank and the depositors.

3.12. CHAPTER SUMMARY

By applying AIRCABS, mutual benefit for investors, entrepreneurs and bank are maintained as unbanked and banked customers are attracted to the banking system. It also increases investment by narrowing the gap between the informal and formal financial markets. Banks that apply AIRCABS, will improve profitability and thereby increase sustainability in the market. Since the model makes the financial effect of funds disbursed null, the bank improves profitability by collecting commission continuously up to the settlement of the loan. The bank, as an agent, administers the loan disbursed rather than holding the loan as an asset on its balance sheet, and hence the bank is not affected by credit risk. To increase liquidity the bank can mobilise deposits by paying higher discrete deposit interest rates on deposits. The bank can directly finance loans to an entrepreneur and receive loan interest. Therefore, the bank can work as an agent as well as a direct loan financier.

Investor loan funding, demands of a depositor to move to the investor position, Interest on investor loan funding, the demand and supply of loan in the market, and informal financial sectors are the determinants of an agent bank's interest rate commission.

To avoid credit crunch and liquidity problems, the bank can transfer the credit risk to investors and entrepreneurs and mobilise deposits by incentivising the interest rate on customer deposits. An investor can provide funds to the agent bank, either to receive discrete market interest on deposits straightaway, or disburse a loan to an entrepreneur to collect credit price. If the fund provider wishes to receive a loan interest rate on funds deposited, the bank disburses it to the entrepreneur to receive loan interest. If, however, the fund provider requests the bank for a higher loan interest instead of deposit interest on funds already disbursed to an entrepreneur, the bank stops paying deposit interest on the disbursed funds, an investor receives a credit price, and the bank receives interest rate commission for administering the loan on behalf of the investor.

Generally, applying AIRCABS can enhance investment. The fund provider and borrower are principal promoters of the agent bank rather than high-cost bank advertisements to promote its products. Money laundering and an informal financial market can be controlled, and banking problems, such as bank toxic assets or contagion and liquidity problems specifically and bank panic in general will be alleviated.

CHAPTER 4: METHODOLOGY

4.1. INTRODUCTION

This chapter presents a stepwise description, explanation and prediction of dependent and independent variables in developing empirical methodology to test the viability of AIRCABS. Primary data collected using structured survey questionnaires from 300 sampled populations and secondary data collected from the financial statements of all commercial banks in Ethiopia published in the period July 1, 1993 up to June 30, 2016 were used. The data collected were analysed using canonical correlation and multinomial logistic regression statistical tools. The survey questionnaires were measured using Cronbach alpha, Kuder-Richardson and analysed using coefficient of variation and factor analysis.

The chapter is organised as follow: Section 4.2 sets out the research approach. Section 4.3 discusses the research design. Section 4.4 discusses unit of analysis. Section 4.5 details the research participants and sample size. Section 4.6 discusses sample and sampling method. Section 4.7 discusses AIRCABS process flow model. Section 4.8 discusses material and methods. Section 4.8.1 discusses measurement instruments. Section 4.8.1.1 discusses measurement instruments used to collect primary data using survey questionnaires. Section 4.8.1.2 discusses the measures of continuous data type instruments applied in the models. Section 4.9 discusses the method of analysis. Section 4.9.1 discusses Canonical Correlation Analysis. Section 4.9.2 discusses multinomial logistic regression analysis. Section 4.9.3 discusses mixing individual survey respondents' perception with quantitative data analysis result. Section 4.10 contains the chapter summary.

4.2. RESEARCH APPROACH

The research is based on positivist research philosophy, which helps to generalise patterns of research to collect data from selected banks' branches and head offices in Addis Ababa and their borrowers and depositors and unbanked/underbanked individuals based on the objective view of reality and analysis with secondary data using statistical tools, SPSS. The quantitative research under study used non-experimental research design approach to follow a procedure of collecting and analysing qualitative data which collected using instruments-based questionnaires and to mix it with quantitative data collected from public and private banks'

audited financial statements in Addis Ababa, Ethiopia by applying a survey and a correlation design.

The target population of the research consists of private and public banks' credit and fund management team leaders, officers, directors, vice-presidents, branch managers, depositors and borrowers of the selected banks and unbanked/under banked individuals in Addis Ababa, Ethiopia. Though the study target was bank professionals and borrowers and depositors and unbanked/underbanked individuals in Ethiopia, the selected target populations in Addis Ababa, Ethiopia are accessible. The research approaches in constructing variables for data collection and analysis are depicted in the following diagram:

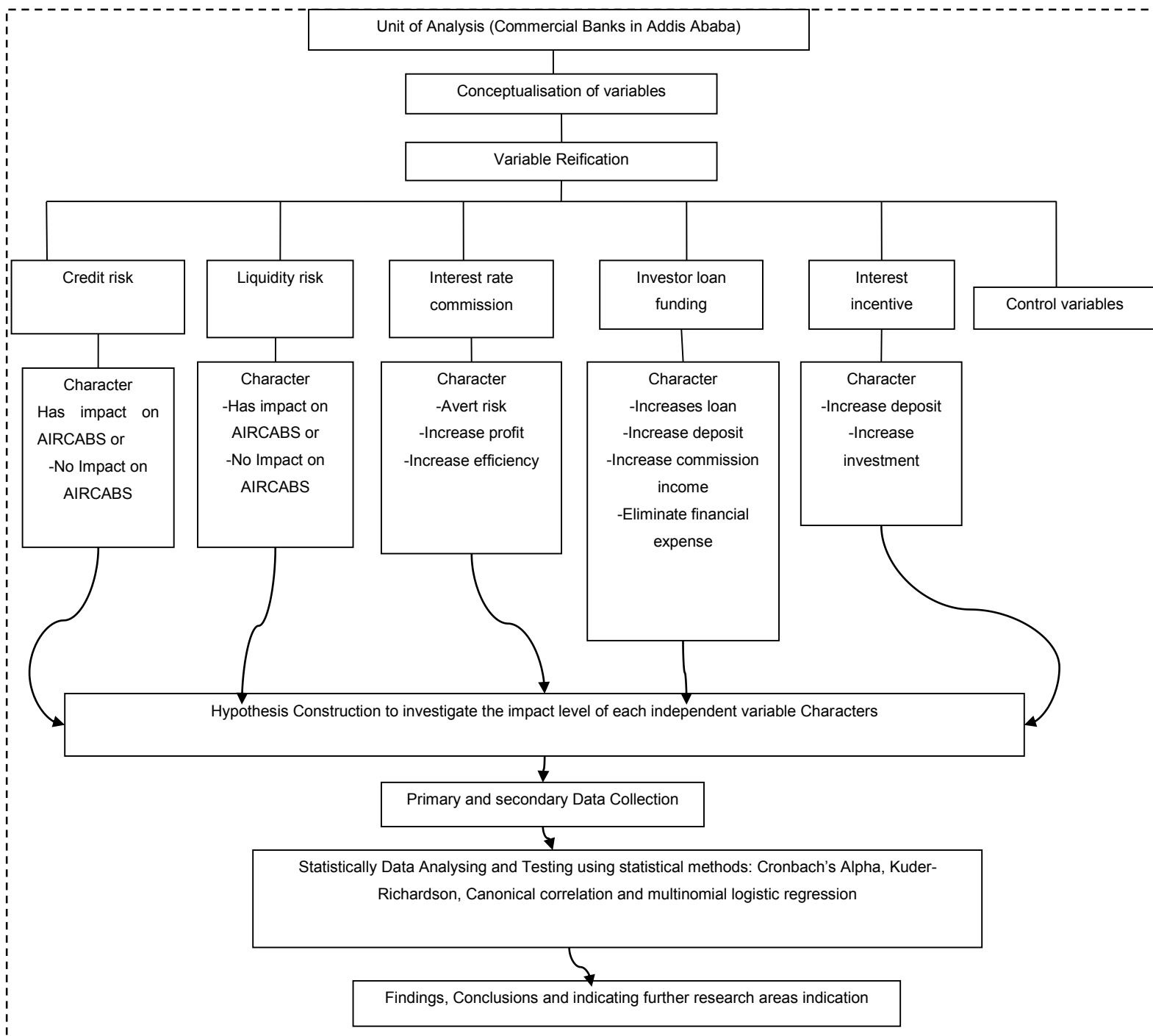


Figure 4.1: Research approach in constructing variables and testing

Source: Author

4.3. RESEARCH DESIGN

The data collection is large enough to be representative of the wider population. To investigate variables over time series, 23 years of secondary data was collected from banks' financial statements. The impact of independent variables within and across the groups is also assessed to find common relations over all focus groups.

In this positivist approach, the primary objective of the research study is to measure the effect of credit risk and liquidity crunch on AIRCABS in administering investor loan funding to the entrepreneur, to measure and predict the effect of investor loan funding on profitability and sustainability of an interest rate commission agent bank and to measure and predict the effect of discrete market deposit interest rate incentive on stable deposit mobilisation. Data collected that supports the theory using partially open-ended questionnaires and bank financial statements published from July 1, 1993 to June 30, 2016 were excursively revised before additional tests were conducted.

The aim of quantitative research strategies is to standardise the response in survey questionnaires, which are attached (Appendix F) and to record activities related to data collection. To analyse the data collected, a data analysis strategy is developed to estimate the casual relationship and association between dependent and independent variables. The data collection for the research study considered the full range of possibilities to collect data using instrument-based questions that measure the participants' attitudes. Data were collected from bank financial statements based on ratios and survey research questions respectively to answer the following research questions:

- What is the effect of credit risk, such as a bank's toxic or non-performing or contagion asset and liquidity crunch on AIRCABS?
- What is the effect of an investor's loan funding on a bank's profitability and sustainability in the market?
- What is the effect of discrete market deposit interest rate incentive on bank's stable deposit mobilisation?

Sample data for the research study is considered from one government and 15 private commercial banks in Addis Ababa, Ethiopia. The data collected was analysed using SPSS statistical software and tested using canonical correlation and multinomial logistic regression.

4.4. UNIT OF ANALYSIS

The unit of analysis of this research study is all commercial banks in Addis Ababa, namely the Commercial Bank of Ethiopia, Awash International Bank of Ethiopia, Dashen Bank, United Bank, Oromia International Bank, Addis International Bank, Bank of Abyssinia, Debub Global Bank, Brehan International Bank, Enat bank, Oromia Cooperative Bank, Abay Bank, Buna International Bank, Lion International Bank, Nib International Bank, Wegagen Bank.

4.5. RESEARCH PARTICIPANTS AND SAMPLE SIZE

The participants considered are individuals in private and public banks such as credit and fund management team leaders, experts, officers, directors, vice-presidents, branch managers of the selected banks and unbanked/underbanked individuals. Because of time and cost constraints, outlying branches of the selected banks, informal sectors and unbanked/underbanked population were not considered in sampling.

The study is from a population of 1000, excluding construction and business banking, which merged with Commercial Bank of Ethiopia effective April 1, 2016 and the Development Bank of Ethiopia, which is involved in non-commercial banking business. Altogether 1053 branches opened in Addis Ababa, as well as 52 branches of construction and business banks and one branch of the Development Bank of Ethiopia. These were excluded from the total branches (1053) opened in Addis Ababa in the year 2016. The 1000 branches opened by other banks, which were from construction and business banks and the Development Bank of Ethiopia are therefore considered as the population of the study Appendix E).

Krejcie and Morgan (1970) developed a model for determining a sample size for research activities. They consider an acceptable margin error for continuous data at 3% margin error and for categorical data at 5% margin error and they calculated a sample size(s) = 278 for a population size (N) = 1000.

Bartlett, Kotrlik and Higgins (2001) calculated sample size (S) = 106 for population size (N) = 1000 based on sample error .03, alpha =.05 and t-value=1.96. For categorical data they calculated sample size (S) = 278 based on sample error=0.05, Probability value=0.5 and t-value = 1.96. Since the research study survey questionnaire contained both categorical and continuous instruments averaging the above cited sample sizes, 106 and 278, we got minimum sample size = 192 for both categorical and continuous data under the same population size (N) = 1000. The research study considered sample size(s) = 300 which

was greater than the above calculated sample size based on the population size (N) = 1000 and it was found adequate for data collection from the given population size.

For a population of 1000, the sample size is therefore 300, which were proportionately surveyed according to the size of the banks' branches in Addis Ababa using stratified sampling (Appendix E). The bank whose market share was the biggest took the highest proportionate survey, whereas the bank whose market share was the smallest took the smallest proportionate survey. Secondary data, such as audited financial statements and economic indicators from the National Bank, were considered for the period covering from January 1, 1993 to June, 2016. However, all banks do not release their audited financial statements at the same point in time of the accounting year end, June 30, XXXX and the aggregated financial statements of all banks reported to the National bank of Ethiopia were considered for secondary data.

4.6. SAMPLE AND SAMPLING METHOD

The sampling process involves defining the target population of this research study, such as private and public banks' credit and fund management team leaders, officers, directors, vice-presidents, branch managers, depositors and borrowers of the selected banks and unbanked individuals. The sampling frame is targeted population in Addis Ababa, Ethiopia. Public and private banks' branches, including their head office subdivided into medium, large and small according to the bank's size and simple random sampling drawn within each subgroup to get the targeted number of banks' divisions/branches. From 1000 target population, taking 300 samples was a required and adequate number of observations for statistical inference. Accordingly, the ratio of observation to independent variables is 60. Secondary data were collected based on ratios of each interested data for the research and analysed using canonical correlation and multinomial logistic regression statistical tools.

The sampling follows stratified sampling by categorising banks according to their size, based on their number of branches including their head office. The larger the bank the more employees it will have. The increment of the number of employees therefore indicates growth of loan disbursement and capital of the bank (Bernanke & Lown, 1991). This implies that the larger the bank the better the quality of data collected. A simple random sample is therefore drawn within each subgroup to get the target sample of unit analysis from which 300 questionnaires were collected. The sample designed (Appendix E) enable us to collect the targeted data to meet the research objective.

4.7. AIRCABS PROCESS FLOW MODEL

AIRCABS is a system adopted by a bank to be an agent for investors' loan funding to entrepreneurs by including seller and buyer agreement that the loan would be administered after disbursement by retaining reasonable interest rate commission from the agreed investors loan funding credit price. Increasing the deposit interest rate increases deposit mobilisation. Similarly, increasing the credit price will increase the demand of investors to provide loan funding which in turn increases the bank's loan mobilisation. As mentioned, Tessema and Kruger (2015) recommend that to adopt AIRCABS, banks should develop 360-, 180- and 90-degrees lending strategies. AIRCABS as model is depicted in figure 4.2.

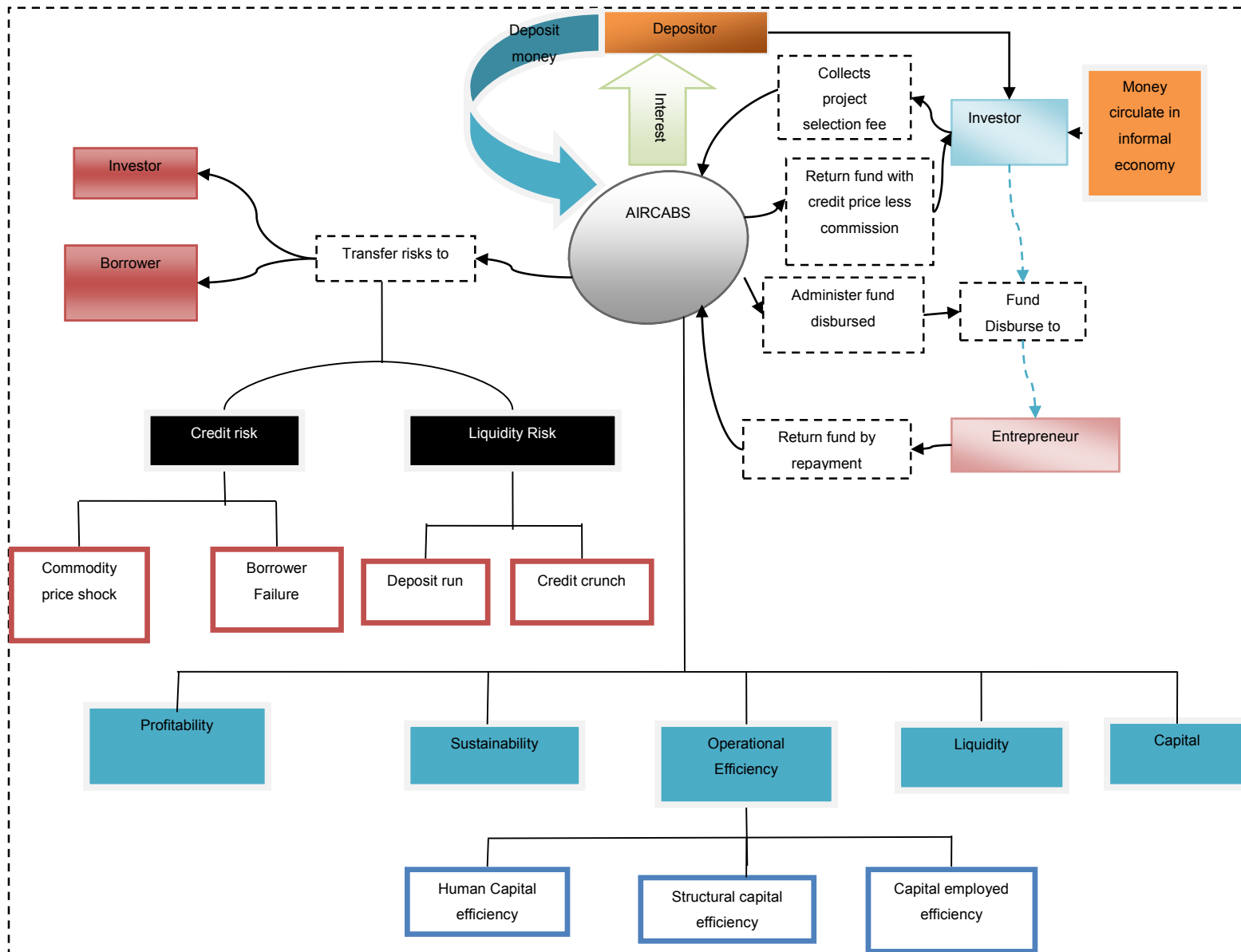


Figure 4.2: AIRCABS process flow Model

(Source: Author)

An AIRCABS improves profitability, sustainability, operational efficiency, liquidity and capital by transferring credit risk and liquidity crunch to investors and entrepreneurs. Other factors were kept constant for this research study, and credit risk is considered emanating from commodity price shock and borrower failure, whereas, liquidity crunch emanates from deposit run and credit crunch. AIRCABS needs to be more efficient in technology, human capital and finance. Applying adequate technology and human capital helps to avoid exposure to operational risk.

AIRCABS as model depicted in figure 4.2 details how an agent bank processes investor loan funding and administers the loan after disbursement to generate non-interest income by collecting project selection fee and interest commission from investor's credit price as a return for loan administration and collection of disbursed fund on behalf of investors.

The method of data collection and analysis in developing the research methodology in general is detailed in the following section.

4.8. MATERIAL AND METHODS

The research study follows positivist data collection methods. This helps to test the hypotheses based on primary and secondary data. For this research study, the Likert scale and binary scale were used to collect primary data and ratios were used to collect secondary data. To measure categorical survey questionnaires binary scales are used. Ordinal data are measured using a five-point Likert scales ranging from strongly agree to strongly disagree.

Primary data collected using self-administered survey questionnaires that were given to 16 enumerators as contact persons of their own bank. The population size was 1000 and the sample size was 300, which is proportionately surveyed according to the size of the banks' branches in Addis Ababa using stratified sampling method. The bank whose branch and capital market share is the biggest took the highest proportionate survey, whereas, the bank whose branch and capital market share is smallest took the smallest proportionate survey. The increment of the number of employees indicates growth of loan disbursement and capital of the bank (Bernanke & Lown, 1991). This implies that the bigger the size of the bank, the better the quality of data collected.

Secondary data collected from audited financial statements of commercial banks in Ethiopia and from economic indicators published by the National Bank were considered for the period covering from 1 July 1993 to 30 June 2016.

Hair, Anderson, Tatham and Black (1998) defined the minimum required observation to independent variables in multinomial regression research as 5%, otherwise the sample size that does not meet the minimum requirement can lead to inadequate result. However, the ratio of observations to independent variables of the research study was 60 observations per variable, which is sufficient to have adequate results.

4.8.1. Measurement instrument

The survey questionnaires to measure research variables were developed from literature. The survey instruments consisted of dichotomous and multipoint questions to which the respondent assigns value based on the underlying anchors on the scale and these were later summed to arrive at the total score. Ordinal data variables such as credit risk, liquidity crunch, AIRCABS employed Likert's summative scaling methods. Dichotomous data questionnaires for variables such as investor loan funding, and stable deposit employed Guttman's cumulative scaling.

To increase the reliability of variables derived from the summative or cumulative scale, Cronbach's Alpha and Kuder-Richardson are used to determine the internal consistency or average correlation of items in the survey instrument. The Alpha coefficient that ranges in value from 0 to 1 was applied to describe the reliability of factors extracted from dichotomous or Likert scales. As a rule of thumb, Cronbach's Alpha greater than or equal to 70% is acceptable for the degree to which the measurement instruments succeed in describing research interest (Cronbach, 1951).

Research variables used in the survey instrument were measured by using Likert and binary scale questions. Binary scale survey questionnaires measured by Kuder-Richardson whose alpha value is greater than or equal to 60% as is not uncommon in exploratory research accepted for the degree to which the measurement instrument succeeds in describing research interest. Because there is no revalidated measure that can measure instruments constructed in this research study, a new instrument was designed to measure the constructs.

4.8.1.1. *Measurement instruments used to collect primary data by survey questionnaires*

Indicators of credit risk and liquidity crunch measures

- Decrement of bank loan growth and capital is sign of liquidity crunch
- Bank lending practices that make borrower more vulnerable to abusive practice enhances liquidity crunch.
- Banks involved in high level of interest income are exposed to liquidity crunch
- Misjudgement of bank strategy increases the bank liquidity risk.
- Bank failures come from deposit run.
- A high illiquid asset that is unaccepted for common valuation in market is the source liquidity risk
- Instability of depositors leads the bank to liquidity risk
- Diversifying loans funded by the bank out of intended purpose leads the borrower to default
- Funding loan by bank to entrepreneur as own asset increases the bank's credit risk
- Credit operation weakness of the borrower leads the borrower to default
- A loan sanctioned by corruption leads the borrower to default
- Lack of good credit assessment and follow-up by bank leads to an increase in non-performing assets
- Borrowers default due to a lack of management support from the lending institution
- Buying and selling of money expose the bank to credit risk Decline in price for commodity of exporters, who used bank loan facility, can result -in higher non-performing loans (NPLs)
- As capital adequacy increases credit risk of the bank decreases

Indicators of Investor Loan funding measures

- Investor Loan funding increases the agent bank's profitability
- Investors' loan funding enhances the bank liquidity and efficiency
- Investor loan funding can enhance the bank's loan administrative efficiency and capacity
- Funding loan by investors to entrepreneurs through an interest rate commission agent bank eliminates bank exposure to credit risk and liquidity crunch

- As the supply of loan funding by investor to entrepreneur increases through an interest rate commission agent bank investment in a country enhances and thereby increases the country's GDP
- Benefiting credit price to investor loan funding enhances the agent bank interest rate commission

Indicators of discrete market deposit interest incentive measures

- The increase of deposit interest rate increases the demand of depositor.
- Applying a discrete market interest rate incentive for those deposit's volume increases the demand of the depositor to keep their deposit stable increases
- Applying various level deposit interest rate incentives for depositors enables the bank to obtain more stable deposits
- Allowing depositor to participate in bank investment by paying proportionate credit price for their partial or full fund enables the bank to have more stable funds.
- Interest incentive on deposit in terms of incentive in kind enables the bank to hold more customers.

Indicators of AIRCABS measures

- The bank's buying and selling of funds deprives the depositors from obtaining a credit price
- As deposit and credit interest rate approach equilibrium point the bank will work as an interest rate commission agent for investor loan funding to entrepreneurs to enhance its sustainability in the market
- Providing alternative investment opportunity to fund provider by AIRCABS enhances stable fund in the bank.
- Providing high deposit interest rate and credit price by AIRCABS enables the bank to attract funds from the unbanked and banked society
- Administering investor loan funding through AIRCABS eradicates liquidity crunch
- Bank can transfer credit risk using AIRCABS to the entrepreneur and investor to increase its profitability and sustainability
- AIRCABS enables the fund owner to search potential borrowers with or without collateral in the market to provide a credit facility using the bank as agent

- The right of the investor and depositors to get their fund return will be safeguarded by the bank using AIRCABS
- Under AIRCABS the bank's profit will be maximised without financial expense

4.8.1.2. *Measures of continuous data type instruments applied in the models*

- **Measures of Liquidity crunch ratio**

This can be expressed in terms of liquidity risk and credit crunch. Liquidity risk arises from deposit withdrawal by customers, which causes the bank to run short of funds and forces bank to liquidate illiquid assets. The bank liquidity exposure to risk can be measured using stock approach which employs ratios. Different authors use different ratios to measure liquidity risk exposure of a bank, but the fact remains that unsatisfactory ratio results may not indicate insolvency. Rather, it indicates the risk to increase the bank's awareness thereof. The main purpose of using stock approach is that it measures the bank's liquidity position at par, disregarding the size and standard level of the bank.

Zehri, Abdelbaki and Bouabdellah (2012) use liquidity shock measure as percentage of cash to total assets to show that the stability of Islamic banks was better than that of conventional banks during the crisis of 2007-8. Kumbirai and Webb (2010) used the liquidity shock of sudden deposit withdrawal as percentage of liquid assets to total deposit and short-term borrowing funds.

However, the research study considered liquidity shock as bank run that erodes the deposit level at the bank and at this point an increase in customer deposits as against total customer deposits creates a positive percentage, but a decrease creates a negative percentage. Therefore, depletion of customer deposits can be a decline in percentage of the total deposit. This can be expressed as a shift of demand to deposit curve to the left. Therefore, bank run can be measured as a percentage change in deposit level to total deposit, which can be expressed as

$$\text{Deposit run in \%} = \frac{(D_{Current} - D_{Last})}{D_{Total}} \times 100 = \frac{\Delta D}{D_{Total}} \times 100$$

On the other hand, the other source of liquidity crunch is defined by Bernanke and Lown (1991) as a significant leftward shift in the supply curve for bank loans, holding constant both the safe real interest rate and the quality of potential borrowers. AIRCABS administers investors' loan funded to entrepreneurs without keeping the disbursed funds on bank balance sheet. However, a bank can use AIRCABS in a separate unit of the organisation along with the conventional

banking system. In this case, new credit extension of banks in a country can be measured as percentage of change in loan extended to total loan.

$$\text{Credit Crunch in \%} = \left(\frac{L_{\text{Current}} - L_{\text{last}}}{L_{\text{Last}}} \right) \times 100 = \frac{\Delta L}{L_{\text{Total}}} \times 100$$

The same credit crunch measure is used by Bernanke and Lown (1991) to identify the decrement of gross loans either due to a reason inherent to the bank liquidity crisis. As the level of loan advance decreases, investment and production weaken and, as a result, the liquidity crisis worsens. A financial crisis that arises from liquidity crisis can have a negative impact on the real economy of the country (Brunnermeier, 2009). However, an interest rate commission agent bank transfers risk to investors and entrepreneurs avoiding effects of financial crisis that affect other banks.

The following is a summary of liquidity crunch variables used in this research study:

- 1) **Deposit run** ($\Delta D/TD$)- This ratio measures the deposit run on bank as a percentage of change in deposit to total deposit. As the percentage of change in deposit to total deposit decline, there is a run on bank by depositors. As the percentage of change in deposit to total deposit increases, there is no a run on banks by depositors. As deposit withdrawal increases, the bank's illiquid assets that cannot be converted into cash increases.
 - 2) **Credit crunch** ($\Delta L/TL$) - This ratio measures the decline of supply of loan at macro level as percentage of change in loan and advance to total outstanding loan. The decline of change in loans and advances to total outstanding loan indicates the existence of liquidity crunch.
 - 3) **Liquidity risk exposure** (LA/TD) - This ratio measures the liquidity risk of the bank as percentage of liquid assets to the sum total of customers deposit and bank's short-term borrowing. As the ratio decreases, the bank becomes more exposed to liquidity risk.
- **Measures of credit risk Ratio**

Accounting measure of credit risk variables captured the bank's non-performing asset to total loan portfolio. The major factor that could affect banks' credit extension is the risk associated with borrower failure. Credit risk arises from the borrower's non-payment of the loan and has a current and prospective impact on the bank's earnings and capital. Once the loan has been overdue for more than ninety days the total amount is considered as non-performing asset even

if the debtor pays the repayments continuously without settling the overdue loan amount. Non-performing asset ratio does not specifically measure how much the borrower lags repayments due to new loan disbursement but measuring at par enables us to understand the level of non-performing asset percentage. In identifying the factor affecting the bank credit, Rabab'ah (2015) used the non-performing ratio measure as percentage of non-performing asset to total loan portfolio.

In identifying the impact of credit risk on bank performance, Kolapo, Ayeni and Oke (2012) employed a ratio of loan loss provision to total loan to measure credit risk.

Commodity price shock can cause accelerated failure of bank borrowers businesses, which in turn leads them defaulting on loans. The commodity price shock measured as percentage change in price shock (Arezki & Bruckner, 2012; Bruckner & Ciccone, 2010).

Increases in commodity prices indicate that commodity-exporting countries focus more on exportable items. Because of this, exporters who used bank loans are able to pay within the agreed loan period, whereas, a decline in commodity price makes exporters fail to repay bank loans. Negative commodity price shock can result in increasing bank non-performing asset, bank costs and systematic banking crisis.

The following is a summary of credit risk variables employed in data collection for this research study:

- 1) **Non-performing asset ratio (NPLS)** - This ratio measures the level of non-performing asset to total loan portfolio. As the level of NPLs ratio increases beyond 5% of the total loan portfolio, which is the case in Ethiopian, the bank becomes more exposed to credit risk.
- 2) **Credit risk** (Loan loss provision/Total Loan) - This is a measure of loan loss provision to total loan. As the ratio increases, the bank is exposed to credit risk.
- 3) **Commodity price shock ratio** $\left(\frac{\Delta p}{p_0}\right)$ - This is a measure of change on the current price as a percentage of the last price. As the ratio decreases, the bank is more exposed to credit risk.

- **Measures of Investor loan funding Ratio**

The source of investor loan funding can be deposits at bank in name of the investor or a business in informal economy. In order to be supplied with a loan, an individual must have a constant source of income and progressive saving at the bank as a credible source of money. Per capita, it brings about higher savings and investments and thereby leads to the country's economic development. The financial sector development is measured in terms of financial Deepening, which has positive relationship with total domestic savings. Anthony (2012) used financial deepening as a measure of broad money (M2) to GDP ratio and per capita income as a measure of GNI per capita. To identify macroeconomic factors that affect the bank performance, Bashir (2003) employed GDP per capita and found a positive relationship with bank performance. On the other hand, Adu, Marbuah and Mensah (2013) indicated that the total private sector credit to GDP ratio has a positive effect on sustainability of financial development. Because the increase of investor loan funding enhances the agent bank profitability, the percentage of total loan to total saving is considered by this research study as measure of investor loan funding.

The following is a summary of investor loan funding variables employed in data collection of this research study:

- 1) **Financial deepening (M2/GDP)** -This measure by the broad money (M2) ratio to GDP. It indicates the increased provision of financial service as a result of more liquid money available in the economy. The ratio indicates that the development of financial service is the result of the bank's sustainability and profitability in the market. A lower ratio indicates that the banking system has access to less funds and that the cost of funding is high, which causes lower bank profitability and sustainability in the market. The increment of the ratio indicates an increases in liquidity and thereby enhances banks' profitability and sustainability.
- 2) **Per capita ratio (GNI/popn)** -This ratio measures by Gross national income (GNI) per total population. The growth of the ratio indicates growth in saving and investment which in turn leads to growth in capital formation and re-investment. Per capita measures the income of each person in a country when resource is divided by total population. As income of the population increases the capacity of the society to invest its cash using an agent bank increases.

- 3) **Total domestic saving ratio (TS/GDP)** -This ratio measures by total domestic saving to GDP ratio. This implies that it is a measure of excess of gross domestic saving over consumption by government and the private sector. As the ratio increases, it indicates that the country's capacity in domestic investment is higher and thereby the bank's profitability and sustainability in a market is also higher.
- 4) **Gross private domestic investment to total bank deposit ratio (GPDITBD)**- This measured total gross domestic investment in domestic production using private business capital to total domestic saving raise bay bank. The investment can use investor loan funding through AIRCABS. As the ratio increases, private investment increases and AIRCABS profitability increases.
- 5) **Management efficiency ratio (NIE/NII)** - This measured total non-interest expense as percentage of total non-interest income. The ratio indicates how much money the bank invest to produces 1 dollar profit. Since AIRCABS does not hold disbursed loans as an asset, the increase in interest rate increases demand of investors fund provision and the bank income from commission and fees. As the ratio decreases the management efficiency to produce non-interest income employing its asset increases whereas as the ratio increases the bank incurred loss to get one dollar profit.

- **Measures of discrete market deposit interest incentive ratio**

In the traditional banking system, the increment of deposit follows the deposit interest rate attractiveness of a bank. As interest on deposit increases the demand of depositors to deposit their money at bank also increases. Therefore, applying deposit interest incentives for deposit mobilisation enhances stable deposit at bank. AIRCABS can also mobilise deposit by pooling depositor from money depositor position to investor position to benefit the depositor a credit price in terms of deposit interest rate. However, an AIRCBS can move to agent position if depositors wish to lend their fund to entrepreneurs through an AIRCABS to obtain the credit price. In this regard, an AIRCABS mobilises stable deposit by opening an alternative investment outlet for depositors. Mashamba, Magweva and Gumbo (2014) used net interest rate margin and average deposit rate as measure of deposit mobilisation. As deposit interest rate is the basic deriver of deposit mobilisation at banks, the volatility of the rate in the market affect stable deposit mobilisation at bank. Applying deposit interest incentive per the incremental of deposit volume that would remain deposited for some specified or unspecified period enables banks to

continuously mobilise stable deposit. The deposit incentive rate can be determined by the capacity of the bank to pay the deposit interest incentive. Therefore, deposit payment capacity of a bank measures as the percentage of total interest expense to capital of the bank. As the rate increases, the bank mobilises deposit by paying deposit interest incentive within its payment capacity.

The following is a summary of discrete market interest incentive's control variables employed in data collection of this research study:

- 1) **Deposit rate (AVDR)**—This ratio measures commercial bank average deposit interest rate. As the deposit rate increases, the bank deposit mobilisation increases.
- 2) **Special deposit ratio (SPDR)** -This ratio measures money deposited at bank for a specific purpose for the customer benefit that will not be withdrawn at any time by customer as ratio of total deposit. As the ratio increases, the bank's stable deposit increases.
- 3) **Deposit interest incentive rate (DIIR)** - This measures the growth of deposit interest rate in the next periods (maximum less minimum interest rate) as percentage of deposit interest rate. The ratio measures how much incentive interest rate raised the level of deposit. An increase of the ratio indicates the growth in stable deposits at bank.
- 4) **Efficiency of deposit utilisation ratio (EDUR)** - This measures total interest expense as percentage of total loan interest. Interest expense directly related to availability of sufficient liquidity and the increase of loan cost implies the bank limitation to access fund in a market. The ratio is developed to indicate revenue generated by deposit in loan advances. As the ratio increases, the bank stable deposits increases.
- 5) **Deposit interest incentive payment capacity ratio (DIPC)** - The ratio measured deposit interest expense as percentage of total capital.

- **Measure of AICABS ratio**

On the other hand, Aircabs is a system to be adopted by the bank to be an agent for investor loan funding to entrepreneurs by facilitating fund seller-buyer agreement and administering the loan after disbursement by collecting credit price commission income and project selection fee from investors. As the agent bank administers the investor loan fund after disbursement by benefiting investors a credit price in terms of deposit interest rate, the agent bank does not hold disbursed loan as an asset on its balance sheet. The measuring variables of Aircabs are non-

interest income growth, Bank efficiency, Return on asset (ROA), Return on equity (ROE) and capital adequacy ratio.

The following is a summary of AIRCABS variables employed in data collection of this research study:

- 1) **Non-interest income growth rate (NIN)** – This ratio measures the growth of non-interest income to total income. Non-interest incomes are fee, charge and interest rate commission income which are collected to administer investor loan funding to entrepreneur.
- 2) **Bank's efficiency ratio (EFR)** - This ratio measures a total of non-interest income as percentage of non-interest expense. The ratio measures efficiency of the agent bank capacity to produce non-interest income using its human capital, administrative, technology and structural capital employed.
- 3) **Return on asset (ROA)** - This ratio measures the gross in interest rate commission as a percentage of total fixed assets. The ratio implies how much managed asset is utilised to produce reasonable profit. As the ratio increases the efficiency of the agent bank to produce commission income using one dollar fixed asset increases.
- 4) **Return on equity (ROE)** -The ratio measures net income excluding interest expense as percentage of equity of the bank. The ratio indicates how efficiently the bank management produces income using its shareholder funds.
- 5) **Capital adequacy (CA)** –This ratio measures the bank's capital as percentage of administrative expense. Since AIRCABS transfers credit risk to investors and entrepreneurs, increasing in capital adequacy indicates that bank enhances its stability, efficiency and profitability.

4.9. METHOD OF ANALYSIS

To investigate the bi-directional inter-relationship, as stated in section 4.7, between AIRCABS, and credit risk and liquidity crunch canonical correlation analysis is used in null hypothesis. In the first and second hypotheses to predict and explain the relationship between dependent variable and independent variables multinomial logistic regression is used. Furthermore, survey questionnaires analysed using Cronbach alpha, Kuder-Richardson, coefficient of variation and factor analysis.

4.9.1. Canonical correlation

According to Hair et al (1998), canonical correlation is considered to be the general model on which many other multivariate techniques are based because it can use both metric and non-metric data for either the dependent or independent variables. Multiple regression predicts a single dependent variable from a set of multiple independent variables, whereas, canonical correlation simultaneously predicts multiple dependent variables from multiple independent variables. Although other techniques impose more rigid restriction on the types of data with which they operate, Canonical correlation places the fewest restrictions. Canonical correlation considered by many researchers as a final effort to be used because other higher-level techniques have been exhausted. It has gained acceptance in many fields and represents a useful tool for multivariate analysis. Canonical correlation analysis is a multivariate statistical model that facilitates the study of interrelationships among sets of multiple dependent variables and multiple independent variables (Green & Carroll, 1978 and Green, 1978).

The canonical correlation analysis develops a canonical function which maximises the canonical correlation coefficient between the two canonical variants. Canonical correlation coefficient measures the strength of relationship between the two canonical variants. Canonical correlation analysis is a useful and powerful technique for exploring the relationships among multiple dependent and multiple independent variables (Hair, Black, Babin & Anderson, 2010). Canonical correlation analysis reveals how the two sets of independent and dependent variables strongly related, their strengths of the relationships, and their nature of the relationships defined.

The following specifically set out the advantages of using canonical correlation analysis.

- It limits the probability of committing type one errors which is related to the likelihood of finding statistical tests. While using multiple regression a separate statistically significant tests for each equation, for one independent variable to many dependent variable, substantially increases the risk of type I error. Canonical correlation can access these relationship between the two set of independent and dependent variables in single relationship rather than individual variable (Fan,1997 and Thompson, 1991).
- Canonical correlation is able to analyse data involving multiple dependent and multiple independent variables and it is theoretically reliable with that purpose.

- It shows the strength of correlation between two sets of canonical variates
- It helps to determine sets of dependent and independent variables are independent of one other and the magnitude of the relationship that existed between the two sets.
- The linear combination of sets of dependent and independent variables are maximally correlated since canonical correlation derives a set of weights for each set of dependent and independent variables. (Hair et al, 2010).

Since canonical correlation concerns to reveal the strength of the two set of independent and dependent variables, analysing the relationship between credit risk and liquidity crunch on one hand and AIRCABS on other hand using canonical correlation would help us to show the basic relationship.

4.9.1.1. Canonical Correlation Analysis

Canonical correlation is a multivariate technique that helps to identify the nature, magnitude and relationships within a set of dependent/independent variables and across two sets of independent and dependent variables. The dependent variable for the research under study is AIRCABS and the independent variables are credit risk and liquidity crunch. Since the observation per independent variable is 60 according to the guideline, the sample size is sufficient for canonical correlation and Type II error will not be a problem when the null hypothesis does not reject it when it is false (Henry, 1990; Harrell, 2001). The independent and dependent variables in canonical correlation analysis are detailed in table 4.1

Table 4.1: Dependent and independent variables used in canonical correlation analysis

Independent Variables	Indicators	Measurement level	Variable nature in bi-directional correlation
Liquidity Crunch	Deposit Run ($\Delta D/TD$)	Continuous (Time)	Independent /dependent Variable
	Credit Crunch ($\Delta L/TL$)	Continuous (Time)	Independent /dependent Variable
	Liquidity Risk (LA/TD)	Continuous (Time)	Independent /dependent Variable
Credit risk	Non-performing	Continuous (Time)	Independent /dependent Variable

Independent Variables	Indicators	Measurement level	Variable nature in bi-directional correlation
	asset ratio (TNPLs/TL)		
	Credit risk (LLp/TL)	Continuous (Time)	Independent /dependent Variable
	Commodity price shock ($\Delta P/P$)	Continuous (Time)	Independent /dependent Variable
Dependent Variable			
AIRCABS	Non-interest income (NIN) Growth rate $r = \frac{NIN}{Total\ income}$	Continuous (Time)	Independent /dependent Variable
	Bank's Efficiency ratio (EFR)	Continuous (Time)	Independent /dependent Variable
	Return on asset (ROA)	Continuous (Time)	Independent /dependent Variable
	Return on equity (ROE)	Continuous (Time)	Independent /dependent Variable
	Capital adequacy ratio (CA)	Continuous (Time)	Independent /dependent Variable

Source: Author

The variables' indicators in figure 4.3 are canonical variable of AIRCABS, credit risk and liquidity crunch, the interrelationship of which can be canonical correlation. The relationship between independent and dependent variable indicators employed in canonical correlation is depicted in figure 4.3.

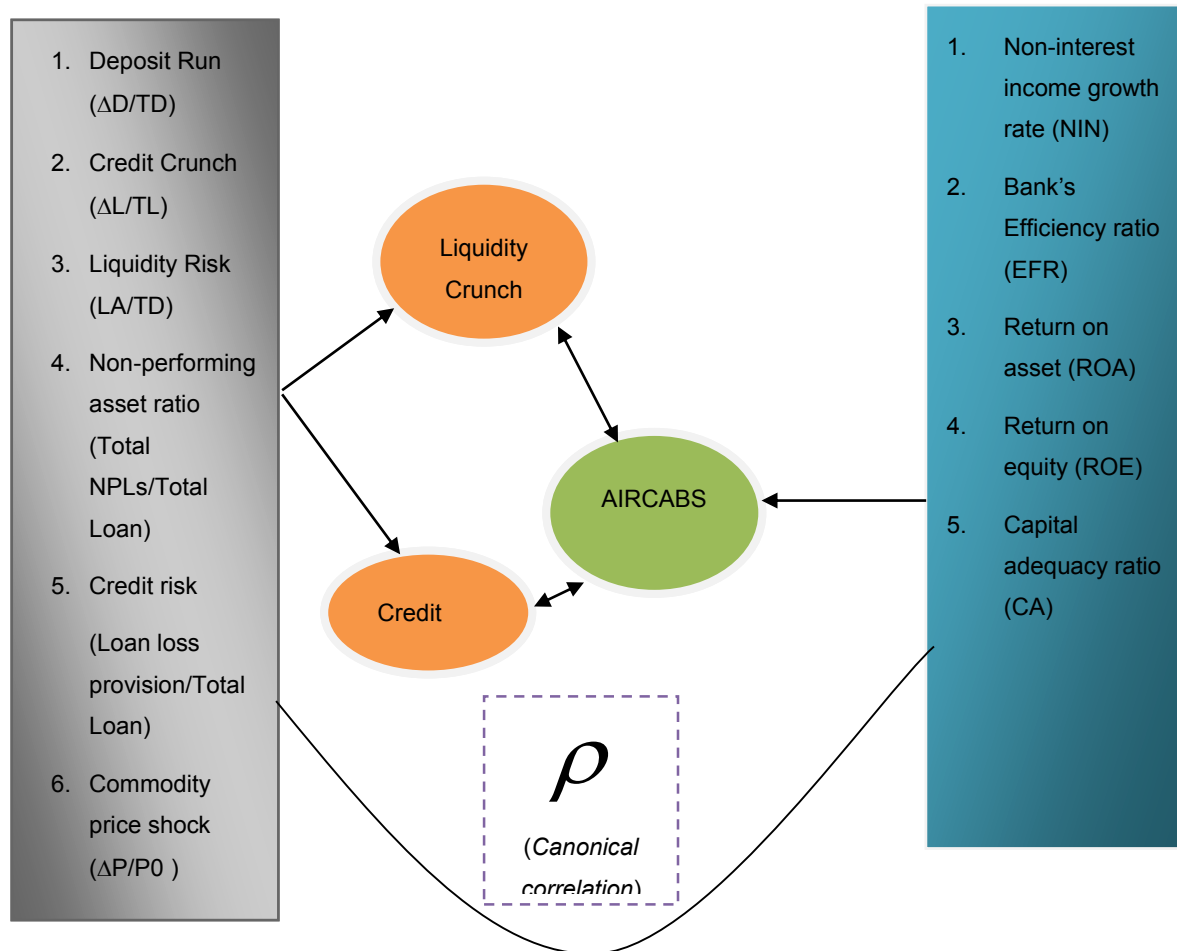


Figure 4.3: Canonical correlation between canonical variants of AIRCABS, and credit risk and liquidity crunch

Source: Author

Since canonical correlation reveals the strength of two sets of independent and dependent variables, analysing the impact of credit risk and liquidity crunch on AIRCABS using canonical correlation shows the basic relationship. Canonical correlation analysis solutions are sensitive to changes of variables such that the change of variables in one variant can be noticed when changing the composition of other canonical variates. Suppose the credit risk and liquidity crunch components are represented by (x) and the AIRCABS components are represented by (y), as independent and dependent variables respectively. Since each credit risk and liquidity crunch, and AIRCABS component variables vary across and within the group, the equation of canonical correlation is calculated as:

Credit risk and liquidity crunch (x) = AIRCABS (y) which can be expressed by

$$U = A_t(\text{credit risk and Liquidity crunch})$$

$$W = B_t(\text{AIRCABS})$$

where A_t and B_t are canonical weights

The correlations between the linear combinations are termed canonical correlations. In the maximisation process, there are **pX and qY** pairs of variables respectively, such that $p \leq q$ for which maximum **p** canonical correlations are generated. Consider for p vectors of U and W variates are sampled such that, S_{xx} and S_{yy} are within-set variance-covariance matrices and S_{xy} is covariance matrix for the vector X and Y.

The linear combination of credit risk and liquidity crunch variables (U) with a group of set AIRCABS (w) by using each set of variables can construct credit risk and liquidity crunch, and AIRCABS variants through the following equation

A) The linear combination of credit risk and liquidity crunch variables (U)EQ(4.1)

$$\begin{aligned} (\text{Credit risk and liquidity crunch})(u_1) &= a_{11}(\Delta D/TD)_1 + a_{12}(\Delta L/TL)_2 + a_{13}(LA/TD)_3 + a_{14}(NPLs/TL) + a_{15}(LLP/TL)_5 + a_{16}(\Delta p/p)_6 \\ (\text{Credit risk and liquidity crunch})(u_2) &= a_{21}(\Delta D/TD)_1 + a_{22}(\Delta L/TL)_2 + a_{23}(LA/TD)_3 + a_{24}(NPLs/TL) + a_{25}(LLP/TL)_5 + a_{26}(\Delta p/p)_6 \\ &\vdots \\ (\text{Credit risk and liquidity crunch})(u_p) &= a_{p1}(\Delta D/TD)_1 + a_{p2}(\Delta L/TL)_2 + a_{p3}(LA/TD)_3 + a_{p4}(NPLs/TL) + a_{p5}(LLP/TL)_5 + a_{p6}(\Delta p/p)_6 \end{aligned}$$

B) The linear combination of AIRCABS (W)EQ (4.2)

$$AIRCABS(W_1) = b_{11}(NIN)_1 + b_{12}(EFR)_2 + b_{13}(ROA)_3 + b_{14}(ROE)_4 + b_{15}(CA)_5$$

$$AIRCABS(W_2) = b_{21}(NIN)_1 + b_{22}(EFR)_2 + b_{23}(ROA)_3 + b_{24}(ROE)_4 + b_{25}(CA)_5$$

\vdots

$$AIRCABS(W_q) = b_{q1}(NIN)_1 + b_{q2}(EFR)_2 + b_{q3}(ROA)_3 + b_{q4}(ROE)_4 + b_{q5}(CA)_5$$

Therefore, the i^{th} canonical variate credit risk and liquidity crunch with AIRCABS pair as (U_i, W_i)

. These canonical variate pairs are simply the correlation between U_i and W_i which can be expressed by the following formula

For Canonical variate pairs between credit risk and liquidity crunch (U_i) and AIRCABS (W_i)

$$(\text{Canonical correlation})_i = \frac{\text{cov}(U_i, W_i)}{\sqrt{\text{Var}(U_i)\text{Var}(W_i)}} \dots \dots \dots \text{EQ (4.3)}$$

Let the random vector of credit risk and liquidity crunch and AIRCABS be (U, W) then the sample (S) of random vector can be expressed as

$$S = ((U_1, W_1), (U_2, W_2), \dots, (U_n, W_n))$$

Where $S_u = (U_1, U_2, \dots, U_n)$ $S_w = (W_1, W_2, \dots, W_n)$

From the equation, we need to find the coefficients of (a), (b) (in EQ (4.1), EQ (4.2)). Suppose we have p observation (x) for credit risk and liquidity crunch and q observation (y) for AIRCABS variants such that the vector variables S_{xx} and S_{yy} are within-set covariance matrices of **X** and **Y** respectively, and S_{xy} is between-sets covariance matrix. Considering the random variables **X** and **Y** with zero mean

The covariance Matrix = $\begin{bmatrix} S_{xx} & S_{xy} \\ S_{yx} & S_{yy} \end{bmatrix}$ EQ (4.4)

(Gray, 2011)

For which the canonical coefficient a_i and b_i measure the strength of the relationship between canonical variants of credit risk and liquidity crunch, and AIRCABS can be determined by solving the following equations

$$\begin{aligned} (S_{xy} S_{yy}^{-1} S_{xy} - \lambda_i S_{xx}) a_i &= 0 \\ (S_{xy} S_{xx}^{-1} S_{xy} - \lambda_i S_{yy}) b_i &= 0 \end{aligned} \dots\dots\dots \text{Eq (4.5)}$$

Where $i=1,2,3,\dots,n$ and the lambda (λ_i) is the ordered Eigen values of the corresponding determinate equation. Therefore, we have correlations

$$\rho_1 \geq \rho_2 \geq \dots \geq \rho_p$$

With corresponding vectors $(a^1, b^1), (a^2, b^2) \dots, (a^p, b^p)$ by maximising the correlations

$$\begin{aligned} \rho_s &= \text{cor}((\text{credit risk and liquidity crunch})^s, (\text{AIRCABS})^s) \\ &= \max_{a^s, b^s} \text{Cor}((\text{credit risk and liquidity crunch})(a^s), (\text{AIRCABS})(b^s)) \end{aligned} \dots\dots\dots \text{EQ (4.6)}$$

Which subject to $\text{Var}((\text{credit risk and liquidity crunch})(a^s)) = \text{Var}(\text{AIRCABS}(b^s)) = 1$

Where $s = 1, 2, 3, 4, \dots, p$ (Gonzalez, Djejan, Martin, and Baccini, 2008; Hotelling, 1936)

Therefore, we could look at how well the set of independent variables can predict the set of dependent variables. They reflect the proportion of variance in the canonical variate explained by the canonical correlation relating two sets of variables. There will be as many Eigen values as there are canonical correlations (roots). In this research study, the proportion of credit risk and liquidity crunch (X) and AIRCABS (Y) are the sum to unity to make S_{xx} and S_{yy} singular. The singularity condition can be calculated by eliminating one variable from each set and the $(p-1)$ and $(q-1)$ variables will be paired.

According to Hair et al (1998) when computing canonical relationship, the correlation between two sets of variables is based on the level of significance, the magnitude of canonical root and redundancy index. However, the research study interest is to show the null hypothesis true using three criteria to identify no relationship between pairs of variates in canonical correlation. Therefore, the research study considered the canonical correlation between credit risk and liquidity crunch on the one hand and AIRCABS on the other hand significant when the P-value is greater than 5%, when the magnitude of variable loading is less than 30% and redundancy index is less than 10%.

Since the successive canonical roots are uncorrelated, the redundancy of credit risk and liquidity crunch variable sets can be calculated by considering AIRCABS set of variables. Similarly, AIRCABS's set of variables can be calculated by considering the set of credit risk and liquidity crunch variables. To arrive at a single redundancy index, all redundancies across all roots can be summed up, otherwise the first significant root can be considered as proposed by Stewart and Love (1968).

However, the redundancy of coefficient that explained less than 10% of the remaining variance after that explained by a certain number of functions, the effect size of other functions is considered as a significant non-correlation (Sherry & Henson, 2005). The three methods of determining the relative importance of the canonical function relationship are canonical weights, canonical loading and canonical cross loading. Of all methods, some authors consider canonical loading as alternate to cross-canonical loading to interpret the result (Thompson, 1991; Liu, Drane, Liu, Wu, 2009; and Hair et al, 1998). However, this research study considers both canonical loading and cross-loading to interpret the result.

Rotation in canonical correlation loses the optimal interpretation of the analysis. However, canonical functions, canonical loadings, and standardised canonical coefficients are interpreted using Kaiser's (1974) normalised varimax rotation criterion.

In order to test the level of significance of canonical correlation between independent and dependent variates, Wilks's lambda chi-square is applied. While testing the correlation to avoid type I error, the significance value to interpret the result is set at a 95% confidence interval level. To interpret the magnitude or practical significance of the results, the value of squared canonical correlation that have values: 1.96% for small, 13.04% for medium and 25.92% for large and partial correlation have values: 14%, 36% and 51% respectively (Cohen, 1992).

The data for canonical correlation are analysed using SPSS. The correlation between AIRCABS with credit risk and liquidity crunch showed the existence of the impact of credit risk and liquidity crunch on AIRCABS. However, the non-correlation between AIRCABS on the one hand and credit risk and liquidity crunch on the other hand showed that credit risk and liquidity crunch have insignificant impact on AIRCABS. The null hypothesis is accepted and is the interest of this research study when the first set of variables is independent from the second set of variables, and the regression coefficients, except for the intercepts, are equal to zero.

4.9.2. Multinomial logistic regression

The regression model is divided into a linear regression model and a non-linear regression model, which can be applied when the linear regression model cannot be applied. Simple linear regression and multiple regressions are not a special case of multivariate statistics. Linear regression depicts the relationship between one independent and one dependent variables, whereas multiple regressions depict the relationship between one dependent variable and one or more independent variables. Simple logistic regression analysis applies when there is single dichotomous dependent variable and one independent variable. Whereas multinomial logistic regression applies when there are multiple dichotomous dependent outcomes with multiple independent variables. Multivariate analysis is based on multivariate statistics which involve the observation and analysis of more than one statistical outcome at a time. Multinomial logistic regression is a classification method that generalized logistic regression to multiclass problems that has more than two possible dependent variables.

A multinomial logistic regression model is a form of regression where the outcome variable is binary or dichotomous and the independents are continuous variables, categorical variables, or both. Multinomial logistic regressions predict dichotomous dependent variables, sustainability and profitability of AIRCABS, by continuous independent variable and investor loan funding. It also predicts dichotomous dependent variable, stable deposit, by continuous independent variable and discrete market deposit interest incentive. Multinomial logistic regression is an exact solution to the classification problem that assumes a linear combination of the observed independent variable to determine the probability outcome of dependent variables. Multinomial logistic regression model assumes each independent variable has a single value for each case. Logistic regression assumes that the dependent variable is a stochastic event. The dependent variable describes the outcome of this stochastic event with a function of probability between 0 and 1. Multinomial logistic regression is used to model nominal outcome variables, in which the log odd of the outcome is modelled as a linear combination of the predictor variable. Multinomial logistic regression considers an extension of binomial logistic regression to allow dependent variables with more than two categories.

The purpose of a multinomial logistic regression is to find an equation that best predicts the probability of a value of the dependent variable as a function of independent variables. It also helps to understand the functional relationship between the independent variables and the dependent variable and what might cause the probability of the dependent variable to change. The predictors of dependent variables are dichotomous variables or continuous indicators whose value is expressed by statistical ratio. On the independent side of the models, the continuous variables predict the dependent variables. The dependent variables, profitability and sustainability of AIRCABS and stable deposit mobilisation by a bank, predicted by independent variables, applying multinomial logistic regression analysis is a best fit model to get the right predictor of dependent variables from independent variables.

Logistic regression was developed in handling dichotomous outcomes as an advanced technique of ordinary least squares. Although both logistic regression and ordinary least square were used to test the relationship with a binary criterion, logistic regression is superior to ordinary least square (Pohlman & Leitner, 2003).

Tabachnick and Fidell (2014) and Bayaga (2010) concur that multinomial logistic regression is considered an attractive tool to analyse categorical and continuous data because of the following facts

- a. It does not assume:
 - Normality and equal variance matrices across the groups,
 - linear relationship between dependent and independent variables
 - Homoscedasticity, the variance around the regression line, is the same for all values of the predictor variable.
- b) It assumes independence among dependent variable choices. The choice or membership of one category is not related to the choice or membership of another category (i.e. the dependent variable).
- c) It allows the probability of occurrence of dependent variable given the value of independent variables
- d) It assumes non-perfect separation by predictors to not estimate unrealistic coefficients and to keep a non-exaggerated effect size.

Whether the purpose of a multinomial logistic regression is prediction or understanding of functional relationships, independent variables are selected according to their important causes of the variation in success, and stepwise objective method and careful examination of the data understanding the nature of objective to subjectively choose the best variables employed.

4.9.2.1. *Multinomial logistic regressions analysis*

The problem of the research under study calls for analysis and prediction of a dichotomous outcome: whether an agent bank, in applying AIRCABS, is profitable and sustainable in the market as a function of investor loan funding and whether a bank mobilises stable deposit as a function of discrete market deposit interest incentive. To test and describe the relationship between the categorical outcome variable and one or more categorical or continuous predictor variables a multinomial logistic regression statistical tool was employed.

The dependent and independent variables used in multinomial logistic regression are detailed in table 4.2.

Table 4.2: Dependent and Independent variables used in multinomial logistic regression

Independent Variables	Indicators	Measurement level	Variable nature
	Relationship between Investor loan funding and profitability and sustainability		
Growth in profitability and sustainability (GPS)	Return on capital (ROC) $r = \left(\frac{\Delta ROC}{ROC} \right)$ for $i=1,2,3,...,N$	$r > 0 \rightarrow \text{GPS}$ $r \leq 0 \rightarrow \text{No GPS}$	Dependent/categorical
Investor loan funding (ILF)	Loan to deposit (TL/TD) $ILF = \frac{TL}{TD}$	Continuous (Time)	Independent Variable/categorical
	Financial Deepening(M2/GDP)	Continuous (Time)	Independent/control variable
	Per capita ratio(GNI/POpn),	Continuous (Time)	Independent/control variable
	Total domestic saving ratio(TS/GDP)	Continuous (Time)	Independent/control variable
	Gross private domestic investment to total bank deposit ratio (GPDI/TBD)	Continuous (Time)	Independent/control variable
	Management efficiency ratio (NIE/NII).	Continuous (Time)	Independent Variable
	The relationship between interest incentive and stable deposit		
Stable Deposit (SD)	Change in Core deposit (CD) less average deposit (AD) $cdr = (\Delta CD - AD)$	$cdr > 0 \rightarrow \text{SD}$ $cdr < 0 \rightarrow \text{No SD}$	Dependent/Categorical

Independent Variables	Indicators	Measurement level	Variable nature
Discrete market deposit interest incentive (DMDI)	Net interest rate to normal (NIR/N) $dmdi = \frac{\max(i)_m - normal(i)_{m-1}}{normal(i)_{m-1}}$ <i>i</i> =interest rate <i>m</i> =1,2,3,...,m	Continuous (Time)	Independent /categorical Variable
	Average Deposit rate (AVDR)	Continuous (Time)	Independent
	Special deposit rate (SPDR)	Continuous (Time)	Independent Variable
	deposit interest incentive (DIIR)	Continuous (Time)	Independent Variable
	Efficiency of deposit utilisation ratio(EDUR) $EDUR = \frac{\text{Total interest expense}}{\text{Total loan interest}}$	Continuous (Time)	Independent Variable
	deposit interest incentive payment capacity (DIPC) $DIPC = \frac{\text{Total interest expense}}{\text{Total capital}}$	Continuous (Time)	Independent Variable

Source: Author

Variables to predict the impact of investor loan funding on the bank's profitability and sustainability, such that profitability and sustainability of AIRCABS is a categorical variable for which data entered into analysis as dummy coding 1 for existence of profitability and sustainability; and 0 for non-existence of profitability and sustainability. Similarly, variables to investigate the impact of discrete market deposit interest incentive on the bank's stable deposit mobilisation, such that stable deposit is a categorical variable for which the data entered into analysis as dummy coding 1 for existence of stable deposit; and 0 for non-existence of stable deposit.

When using data in analysis, continuous value is applied for continuous predictors of dependent variables. Each of the categorical variables has a single dichotomous outcome with more than one independent variable. When the value of the predicted coefficient is equal to zero in the multinomial logistic regression model, the hypothesis being tested is said to be null hypothesis, which implies that there is no relationship between the predicted independent variable and the value of outcome dependent variable. The multinomial logistic regression equation in null hypothesis did not predict independent variable closer to the mean of dependent variables. However, significance of the hypothesis implies that at least one of the coefficients values of the predictors is greater than zero and closer to the mean of the dependent variable.

The variable's relationship in the hypothesis is depicted in figure 4.4.

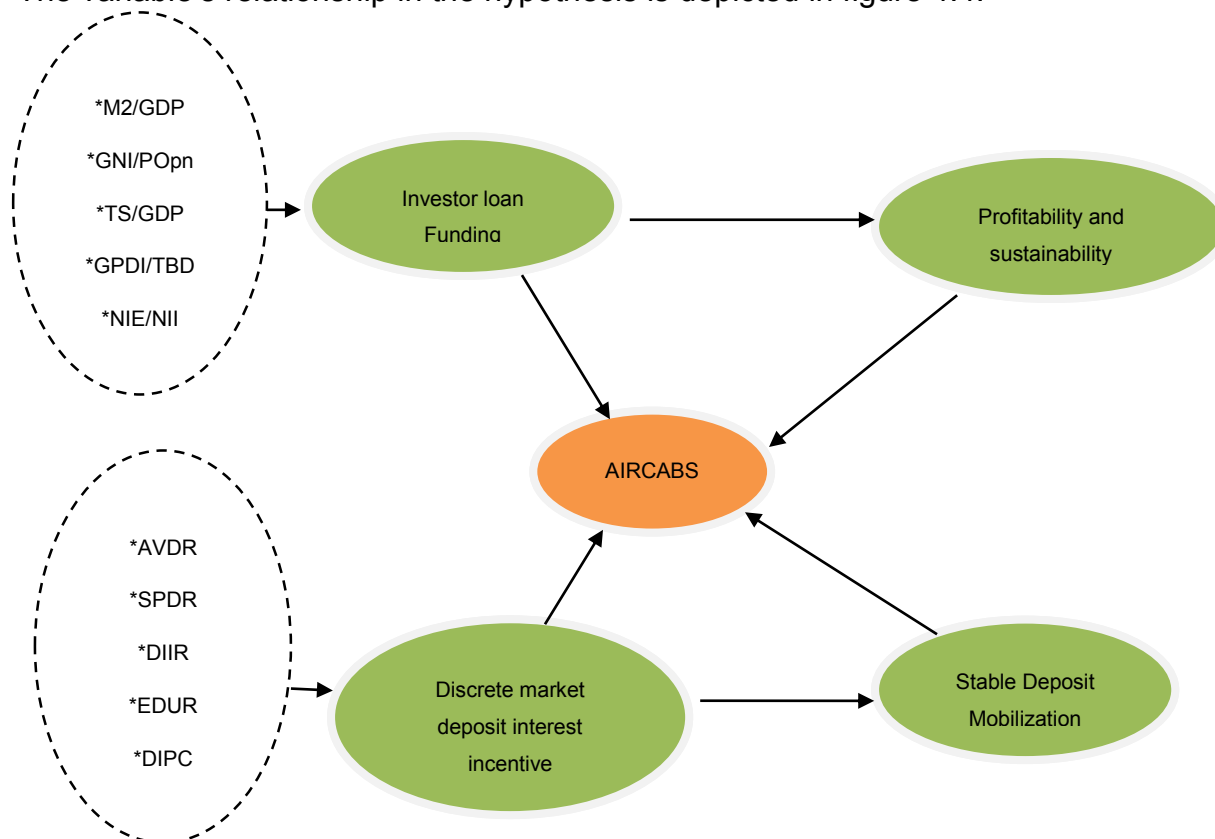


Figure 4.4: Hypotheses (H1 and H2) variables relationship

To identify which of the independent variables' indicators were predictors of dependent variable, profitability and sustainability of the bank in the market and stable deposit, the first and second research hypothesis is depicted respectively by the following multinomial logistic regression equations

$$\text{Log} \left[\frac{GPS(p=1)}{1 - GPS(p=1)} \right] = a + b_1(ILF) + b_2(M2 / GDP) + b_3(GNI/Popn) + b_4(TS/GDP) + b_5(GPDI / TBD) + b_6(NIE / NII) \dots \text{EQ (4.7)}$$

Where

Gross profitability and sustainability (GPS) calculated based on Return on capital (ROC) which in turn calculated total profit as percentage of total capital and the result of which interpreted as greater than 0 $\left(\frac{\Delta ROC}{ROC} > 0 \right)$ for presence of GPS and less than or equal to 0 $\left(\frac{\Delta ROC}{ROC} \leq 0 \right)$ for absence of GPS.

Investor loan funding (ILF): calculated total loan as percentage of total deposits.

$$\text{Log} \left[\frac{SD(p=1)}{1 - SD(p=1)} \right] = a + b_1(DMDI) + b_2(AVDR) + b_3(SPDR) + b_4(DIIR) + b_5(EDUR) + b_6(DIPC) \dots \text{EQ (4.8)}$$

Where

a is the y(GPS or SD) intercept and b is the slope parameter which lay between interval (0,1).

Stable deposit (SD) calculated as the change in deposit (CD) less average deposit (AD) which can be interpreted as stable deposit greater than 0 $(\Delta CD - AD > 0)$ as a presence of SD and less than 0 $(\Delta CD - AD < 0)$ as absence of SD since the change should be greater than the average deposit.

Discrete market deposit interest incentive (DMDI) calculated as change in ordinary saving deposit interest rate as a percentage of the period interest rate. Since the minimum deposit interest rate determined by the National Bank of Ethiopia the change in interest rate was not frequent.

To assess the fit of the model against data collected to test the hypotheses, four inferential tests, namely brown chi-square, the Pearson chi-square, deviance-based and descriptive measures were adopted (Brown, 1982, Prentice, 1976 and Hosmer & Lemeshow, 2000).

4.9.3. Merging individuals survey respondents' perception with quantitative data analysis result

Though the research study focused on positivist research philosophy, explaining the quantitative result of the study with support of human perception responded on survey instruments to answer the same research question multiple methods applied. Integrating the quantitative result of the study with individual survey respondents' perception helped to explore the best method in strengthen problem centred finding of the research study by overcoming the weakness of the qualitative/quantitative methods with the strength of the qualitative/quantitative method (Creswell, 2003 and Castro, Kellison, Boyd & Kopak, 2010).

Coefficient of variation, calculated as proportion of standard deviation to mean or as proportion of standard error estimate to the estimate itself, is applied to measure the precision of individual survey respondents to the point of survey instruments. Though coefficient of variation does not measure bias due to non-response bias it measures the precision of estimated mean and can be applied as estimator of population parameter (Schouten, Calinescu & Luiten, 2013). It is used to compare sample of data from same variables when mean measures were very different (Lovie, 2005). It is a measure of relative variability of positive random variable distribution whose standard deviation less than the mean to show the reliability of the respondents' perception to the point of survey instruments (Pryseley, Mintiens, Knapen, Stede & Molenberghs, 2010). It is applied in finance to determine the relative risk to choice the best alternative investments. The higher the coefficient of variation meant the deviation from central mean was high (Curto & Pinto, 2009). Though the coefficient of variation measure widely applied in field of science, it has not widely applied in social science (Kelley, 2007). Because of this fact the threshold of the coefficient of variation had not fixed at some referral point to interpret individuals' point of agreement with survey instruments. To analysis the survey respondents' agreement or disagreement of the research study, the coefficient of variation reference point set based on the significant level of parameter estimated using quantitative data. Accordingly the maximum level of Likert scale survey questionnaires that set as below or equal to .30 considered as acceptable rates while coefficient of variation above .30 considered to be explained in caution referring to the mean. On the other hand, coefficient of variation for binary survey questionnaires response of the research study that set as below or equal to .50 considered as acceptable rate while ratio above .50 to be explained in caution referring to the mean of the survey instruments.

4.10. CHAPTER SUMMARY

The paper presents a stepwise description, explanation and prediction of dependent and independent variables in research methodology to discover the effect of credit risk and liquidity crunches on AIRCABS in administering investors loan funding to entrepreneurs, to discover the effect of investors loan funding on an interest rate commission agent bank profitability and sustainability, and to discover the effect of discrete market deposit interest rate incentive on bank's stable deposit mobilisation to finance entrepreneurs. The research under study follows positivist research approach to identify the cause and effect relationship between dependent and independent variables.

The empirical research is guided by the recent relevant theory of banking, existing and emerging literature on credit risk and liquidity crunch, the impact of interest rate on deposit and bank profit. Since the bank business model under this research study is new, no emerging literature existed.

Dependent variables with identical control variables are developed to test the robustness and comparability in findings. Primary data collected using cross sectional survey over 16 commercial banks in Addis Ababa, Ethiopia. The sample size is 300 of a target 1000 population. Secondary data are collected using targeted banks' financial statement and quarterly magazines of the National bank of Ethiopia published between 1 July, 1993 and 30 June, 2016. To estimate correlation of dependent and independent variables canonical correlation and multinomial logistic regressions were employed. The survey questionnaires were measured using Cronbach Alpha, Kuder-Richardson and analysed using coefficient of variation and factor analysis. The relationship between dependent and independent variables was analysed using SPSS statistical software.

CHAPTER 5: TESTING PERFORMANCE OF AN INTEREST RATE COMMISSION AGENT BANKING SYSTEM (AIRCABS)

5.1. INTRODUCTION

This chapter analyses data and interprets statistical results in testing the performance of AIRCABS. Primary and secondary data were collected from banking industry in Ethiopia to test the research hypothesis, credit risk and liquidity crunch have no impact on AIRCABS, investor loan funding has positive impact on profitability and sustainability of AIRCABS and discrete market deposit interest rate incentive has a positive impact on stable deposit mobilisation in a bank. To test the hypothesis statistical tools such as Cronbach alpha, Kuder-Richardson (KR-20), coefficient of variation, canonical correlation and multinomial logistic regression were used. The result showed that credit risk and liquidity crunch have no effect on AIRCABS, investor loan funding has significant strong relationship with profitability and sustainability of AIRCABS and discrete market deposit interest rate incentive has also significant strong relationship with stable deposit mobilisation. This led to a conclusion that AIRCABS model is viable and reliable (Tessema & Kruger, 2017(a) and 2017(b)).

The sections in this chapter are organised as follows: Section 5.2 covers the statistical results and analyse. Section 5.2.1 discusses the validity and reliability of survey instruments. Section 5.2.1.1 discusses the statistical result of individual perception responds on credit risk and liquidity crunch survey instruments. Section 5.2.1.1.1 covers the factor analysis for validity of credit risk and liquidity crunch and AIRCABS survey questionnaires. Section 5.2.1.1.2 discusses the measuring of investor loan funding and discrete market deposit interest incentive survey instrument using Kuder-Richardson. Section 5.2.1.1.3 discusses factor analysis for validity of investor loan funding and discrete market deposit interest incentive survey questionnaires. Section 5.3 discusses canonical correlation statistical results. Section 5.3.1 discusses the level of significance of canonical correlation. Section 5.3.2 discusses the magnitude of canonical correlation. Section 5.3.3 discusses redundancy measure of share variances. Section 5.3.4 discusses individual perception of credit risk and liquidity crunch survey questionnaires. Section 5.4 discusses statistical result of investor loan funding and discrete market deposit interest rate incentive. Section 5.4.1 discusses model fitting information. Section 5.4.2 discusses Goodness-of-fit. Section 5.4.3 discusses Pseudo R-Square. Section 5.4.4 discusses likelihood ratio tests. Section 5.4.5 discusses parameter estimates.

Section 5.4.6 discusses the classification table. Section 5.4.7 compares chance accuracy with model accuracy rate. Section 5.4.8 discusses the individual perception on investor loan funding and discrete market deposit interest incentive. Section 5.4 contains the conclusion.

5.2. STATISTICAL RESULT AND ANALYSIS

The research study focused on positivist research philosophy. The individual perception gathered using survey questionnaires and analysed together with the quantitative result to answer the research question.

The following section detailed how the validity and reliability were constructed to measure the perception of individual survey participants. The canonical correlation statistical result that shows the relationship between the independent variables, credit risk and liquidity crunch, and dependent variable, AIRCABS, is discussed in section 5.3. On the other hand, multinomial logistic regression statistical results that showed prediction of profitability and sustainability of AIRCABS using investor loan funding and of stable deposit mobilisation using discrete market deposit interest incentive discussed in section 5.4.

5.2.1. Validity and reliability of survey instruments

5.2.1.1. The statistical result of individual perception responses on Credit risk and liquidity crunch and AIRCABS survey instruments

The quality of measuring instrument of survey questionnaires was ascertained by testing for validity and reliability. Finding the measuring instrument's validity ensures its reliability. The internal consistency of items in instruments measurement is assessed by Cronbach alpha (Cronbach, 1951). The alpha measures the interrelatedness of items in the survey instrument even though it is affected by the test length and dimensionality because it is not sufficient to measure the homogeneity or uni-dimensionality of test items in survey instruments (Cortina, 1993 and Green, Lissitz & Mulaik, 1977). The result of cronbach's alpha that indicates high interrelation among a group of variables was a requirement to proceed factor analysis to test the construct validity of the questionnaires (Rattray & Jones, 2007). Since factor analysis is a dimension reduction technique in searching of underlying unobservable (latent) variables that are reflected in the observed variables and identification of maximally correlated items in survey instruments, considering additional test such as mean, standard deviation and coefficient of variation helped to construct validity of items in survey instruments (Tate, 2003).

The Cronbach alpha values of Likert scale survey instruments developed for credit risk and liquidity crunch on the one hand and interest rate commission agent banking system on the other hand were .820 and .789 respectively. Chronbach alpha value greater than .70 is acceptable to show strong relationship among the items of survey instruments of credit risk and liquidity crunch and survey instruments of AIRCABS.

Table 5.1 depicts higher mean score on credit risk and liquidity crunch's survey questionnaires with less variability relative to the mean. So that, individual participants' perception of credit risk and liquidity crunch strongly agreed with, Q1, Q2, Q4, Q5, Q6, Q7, Q8, Q10, Q11, Q12, Q13 and Q15, because the individual participants' perception was closer to the central mean, whereas, individual's perception deviates from the central tendency on questions Q3, Q9, Q14 and Q16.

Similarly, in table 5.2 the participants have higher mean scores on AIRCABS survey questionnaires with less variability relative to mean even though individuals participant's perception on AIRCABS survey instrument strongly agreed with questions Q2, Q3, Q4, Q5, Q6, Q7 and Q8 because individual respondents' perception was very closer to central mean. However, individual participants' perception deviates from central tendency on Q1 and Q9. Survey questionnaires responds whose coefficient variation lower than .30 is to mean that the participants agreed with the research interest. Accordingly the majority of the respondents agreed with items in the survey instruments.

Table 5.1: Descriptive statistics for Credit risk and liquidity crunch

	Mean	Std. Deviation	Coefficient of variation
1. Decrement of bank's loan growth and capital is sign of liquidity crunch (Q1)	3.77	1.032	.27
2. Bank lending practices that lead borrower more vulnerable to abusive practice enhances liquidity crunch (Q2)	3.71	0.985	.27
3. The bank that involved in high level of interest income exposed to liquidity crunch (Q3)	3.16	1.101	.35
4. The misjudgement of bank strategic increases the bank liquidity risk. (Q4)	4.08	0.995	.24

	Mean	Std. Deviation	Coefficient of variation
5. Bank failures sourced from effect of deposit run. (Q5)	3.63	1.029	.28
6. High illiquid asset that is unaccepted for common valuation in market is the source liquidity risk (Q6)	3.67	0.966	.26
7. Instability of depositors led the bank to liquidity risk (Q7)	4.10	0.990	.24
8. Diversifying loan funded by bank out of intended purpose led the borrower to defaulter (Q8)	3.87	1.151	.30
9. Funding loan by bank to entrepreneur as own asset increases the bank's credit risk (Q9)	3.27	1.105	.34
10. Credit operation weakness of borrower leads the loan to default (Q10)	3.99	0.998	.25
11. Loan sanctioned by corruption lead borrower to default (Q11)	4.06	1.053	.26
12. Lack of good credit assessment and follow up by bank lead to increase non-performing asset (Q12)	4.25	1.102	.26
13. Borrowers default for lack of management support from lending organ (Q13)	3.69	0.993	.27
14. Buying and selling of money exposed the bank to credit risk (Q14)	3.17	1.034	.33
15. Decline of commodity prices for exporters, who used bank loan facility, can result higher non-performing loans (NPLs) (Q15)	3.92	1.004	.26
16. As capital adequacy increases credit risk of the bank decreases (Q16)	3.53	1.156	.33

Table 5.2: Descriptive Statistics for AIRCABS

	Mean	Std. Deviation	Coefficient of variation
1. The bank's buying and selling of fund deprived the depositor's to get credit price (Q1)	3.3066	1.10785	0.335042
2. As deposit and credit interest rate approach equilibrium point the bank shall work as an interest rate commission agent for investor loan funding to entrepreneur to enhance its sustainability in market (Q2)	3.6772	0.97919	0.266287
3. Providing alternative investment opportunity to fund provider by AIRCABS enable to enhance stable fund in the bank (Q3)	3.8531	0.86619	0.224803
4. Providing high deposit interest rate and credit price by AIRCABS enable the bank to attract funds from the unbanked and banked society (Q4)	3.7631	0.93847	0.249387
5. Administering investor loan funding through AIRCABS enable to eradicate liquidity crunch (Q5)	3.5455	0.98926	0.279018
6. Bank can transfer credit risk using AIRCABS to the fund holder and investor to increase its profitability and sustainability (Q6)	3.7359	0.93081	0.249153
7. AIRCABS enables the fund owner to search potential borrowers with or without collateral in the market to provide a credit facility using the bank as an agent (Q7)	3.8077	0.86333	0.226733
8. The right of the investor and depositors to get their fund return will be safely kept by the bank using AIRCABS (Q8)	3.6119	0.96231	0.266428
9. Under AIRCABS the bank's profit will be simply maximised without financial expense (Q9)	3.2727	1.19462	0.365026

The KMO value greater than .60 represented the coefficient of determination between variables to the squared partial correlation between variables (Field, 2009: 647). As indicated in table 5.3 below, KMO test result for measuring instruments of credit risk and liquidity crunch on one hand

and AIRCABS on the other hand were .885 and .828 respectively. These results imply that the partial correlation among measurement instruments was high and the participants' responses in the sample were adequate. The Bartlett's test of sphericity chi-square for credit risk and liquidity crunch and AIRCABS were 1068.78 and 635.784 respectively. KMO and Bartlett's test of credit risk and liquidity crunch and AIRCABS were significant at $P = .000$ and $P = .000$ respectively, which were below the standard significant level ($P < .05$). This implied that the correlation matrix was not an identity matrix. Therefore, the measurement instrument used in data analysis had a strong relationship.

Table 5.3: KMO and Bartlett's Test

Credit risk and liquidity crunch			AIRCABS
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.885	.828
Bartlett's Test of Sphericity	Approx. Chi-Square	1068.781	635.784
	Df	120	36
	Sig.	.000	.000

KMO and Bartlett's test result for credit risk and liquidity crunch on one hand and AIRCABS on the other hand shows a significant strong relationship among items in survey instruments. This leads to further factor analysis to construct validity of survey instruments.

5.2.1.2. Factor analysis for validity of credit risk and liquidity crunch and AIRCABS survey questionnaires

In analysing variance of survey instruments, the dimension of credit risk and liquidity crunch survey instruments reduced to five factors from the total of sixteen and the dimension of AIRCABS survey questionnaires reduced to three factors from the total of nine factors. Factors with Eigen values greater than 1 are retained for further factorial analysis since the estimated variance explained by factors was more than the average variances in a data set. Accordingly, factors of credit risk and liquidity crunch and AIRCABS whose Eigen value greater than 1 accounted for 84.26% and 76.175% of the total variances respectively, which in turn implied that the factors are reliable and highly defined.

The rotated component matrix reduced the numbers of factors to make further analysis of credit risk and liquidity crunch and AIRCABS scale dimensions easier. Since KMO is significant, the data collected using measurement instruments were factorial and factor loading greater than .50 were found. As the value of the factor loading approaches to 1, the variables' correlation with that factor increased. The strong correlation between the variables and the factorial loading is created when variables are loaded highly on that factor. This indicates that the data demonstrates factorial validity where different instruments' measurement of credit risk and liquidity crunch and AIRCABS are highly correlated (Engel & Schutt, 2013). The extracted five factors for credit risk and liquidity crunch on the one hand and the three factors for AIRCABS on the other hand were therefore found to be uni-dimensional and factorially distinct. All items used to operationalise a particular construct were loaded onto a single factor. So that, each survey questionnaire of credit risk and liquidity crunch and AIRCABS have strong correlation with selected component's loadings.

5.2.1.3. Measuring investor loan funding and discrete market deposit interest incentive survey instrument using the Kuder-Richardson test

The alpha value of Kuder-Richardson for investor loan funding was .616 and the alpha value of Kuder-Richardson for discrete market deposit interest incentive was .701. Though the minimum requirement alpha value of the Likert scale items was .70 and more, the alpha value .60 and more was not uncommon in exploratory research. Salvucci, Walter, Conley, Fink and Saba (1997) calculated the range of reliability measures of alpha value between .50 and .80 as moderate and alpha value above .80 as highly reliable. So the alpha value of Kuder-Richardson test results obtained allowed to proceed with factor analysis to construct the validity of the survey questionnaires.

5.2.1.4. Factor analysis for validity of investor loan funding and discrete market deposit interest incentive survey questionnaires

Item in the survey questionnaire for investor loan funding and discrete market deposit interest rate incentive is further analysed using factor analysis to reveal the validity of the survey instrument. Table 5.4 depicts the investor loan funding's Cronbach alpha values of dimension 1 as .986 and dimension 2 as .966. The total variance accounted for dimension 1 was 68.949% and dimension 2 was 31.051%. The higher eigenvalue that helped to determine the percentage of variance accounted for 68.949% in the optimally binary response items are considered over

the smaller one, dimension 2. Similarly, the Cronbach alpha value for discrete market deposit interest rate incentive in dimension 1 was .997 and in dimension 2 was .996. The total variance accounted for dimension 1 was 56.50%. Whereas, for dimension 2 accounted for 43.50%. The higher eigenvalue, dimension 1, whose variance accounted for 56.50% is considered over dimension 2.

Table 5.4: Model Summary Rotation^a

Investor loan funding				Model Summary Rotation ^a Discrete market deposit interest incentive		
Dimension	Cronbach's Alpha	Variance Accounted For		Cronbach's Alpha	Variance Accounted For	
		Total (Eigenvalue)	% of Variance		Total (Eigenvalue)	% of Variance
1	.986	4.137	68.949	.997	2.825	56.496
2	.966	1.863	31.051	.996	2.175	43.504
Total	1.000 ^b	6.000	100.000	1.000 ^b	5.00	100

Where: a. Rotation Method: Varimax with Kaiser Normalisation.

b. Total Cronbach's Alpha is based on the total Eigenvalue.

Once significant Cronbach alpha value and percentage of variance is identified by the survey question with variation less than 10% are excluded from analysis. Table 5.5 and table 5.6 display the coordination of each survey question in relation to the centroid (0, 0) when all survey question items represented by a straight line between dimension 1 and dimension 2. All survey instruments with mean value greater than 10% have a substantial contribution to the principal components. Therefore, all investor loan funding and discrete market deposit interest incentive items in survey instruments strongly contribute to the principal components that are considered in the analysis.

Table 5.5: Variance Accounted For

Investor loan funding survey instruments	Centroid Coordinates			Total (Vector Coordinates)		
	Dimension		Mean	Dimension		Total
	1	2		1	2	
As the supply of loan funding by investor to entrepreneur's increases through an interest rate commission agent bank investment in a country enhances and thereby increases the country GDP (Q5)	.994	.149	.571	.993	.007	1.000
Funding loan by investor to entrepreneur through an interest rate commission agent bank eliminates the bank exposure to credit risk and liquidity crunch (Q4)	.993	.131	.562	.993	.007	1.000
Investor Loan funding increase the agent bank's profitability in broad sample base (Q1)	.993	.026	.509	.993	.007	1.000
Benefiting credit price to investor loan funding enhances the agent bank interest rate commission (Q6)	.992	.008	.500	.992	.008	1.000
Investor's loan funding enhances the bank liquidity and efficiency (Q2)	.993	.043	.518	.992	.008	1.000
investor loan funding can enhance the bank's loan administrative efficiency and capacity (Q3)	1.000	1.000	1.000	.755	.245	1.000
Active Total	5.965	1.356	3.661	5.717	.283	6.000
% of Variance	99.416	22.606	61.011	95.290	4.710	100.000

Table 5.6: Variance Accounted For

Discrete market deposit interest incentive survey instruments	Centroid Coordinates		Total (Vector Coordinates)			
	Dimension		Mean	Dimension		Total
	1	2		1	2	
Allowing depositor to participate in bank's investment by paying proportionate credit price for their partial or full fund enable the bank to have more stable fund (Q4)	.999	.281	.640	.998	.002	1.000
Applying various level deposit interest rate incentive for depositors enable the bank to get more stable deposit (Q3)	.998	.085	.541	.998	.002	1.000
Interest incentive on deposit in terms of incentive in kind enables the bank to hold more clientele (Q5)	.998	.085	.542	.998	.002	1.000
The increase of deposit interest rate increases the demand of the depositor (Q1)	.998	.021	.509	.998	.002	1.000
Applying discrete market interest rate incentive for those deposit's volume increases the demand of depositor to keep their deposit stable increases (Q2)	1.000	1.000	1.000	.970	.030	1.000
Active Total	4.993	1.472	3.233	4.962	.038	5.000
% of Variance	99.867	29.442	64.655	99.244	.756	100.000

Since investor loan funding and discrete market deposit interest incentive survey question items' eigenvalue approach to 1, high inter-correlation is found with factor one and less loaded to the second factor respectively.

The significant of Cronbach alpha allows the researcher to proceed with factor analysis. All factors loading were found to be greater than .50. So that, the measurement instrument of investor loan funding and discrete market deposit interest rate incentive were reliable and valid.

This implies that the survey instruments developed were correct for data collection and for analysis of individuals' perception.

5.3. CANONICAL CORRELATION STATISTICAL RESULT

The relationship between credit risk and liquidity crunch on the one hand and AIRCABS on the other hand identified using Canonical correlation analysis to answer the research question of the following research hypothesis:

H0: Credit risk and liquidity crunch have no positive effect on AIRCABS

To investigate the impact of credit risk and liquidity crunch (deposit run, credit crunch, liquidity risk, non-performing asset and credit risk) on AIRCABS (non-interest income, bank efficiency, return on asset, return on equity and capital adequacy), the following mean and standard deviation are developed to ascertain the variables' deviation from central tendency.

Table 5.7: Descriptive statistics for credit risk and liquidity crunch and AIRCABS

	Deposit Run	Credit Crunch	Liquidity Risk	Non-performing loan	Credit Risk	non-interest Income	Bank Efficiency	Return on Asset	Return on Equity	Capital Adequacy
Mean	0.16	0.15	0.54	0.0288	-4.045	0.0739	2.13	3.85	0.56	10.83
Std Deviation	0.1001	0.1	0.62	0.0565	17.99	0.069	1.02	0.66	0.24	28.51
Coefficient of Variation	0.63	0.67	1.15	1.96	-4.45	0.93	0.48	0.17	0.43	2.63

Source: Author

As shown in table 5.7, the relationship between independent variables, credit risk and liquidity crunch, and dependent variables in AIRCABS are described by simple statistical mean and standard deviation. A very high deviation of variables from central tendency made many variables uncorrelated. Since the standard deviation of liquidity risk, non-performing loan, credit risk, bank efficiency and capital adequacy were greater than their mean value, there is high variability of variables from central tendency except return on asset. Though the maximum coefficient of variation for continuous data calculated as .30, the coefficient of variation of deposit run, credit crunch, liquidity risk, non-performing loan, non-interest income, bank efficiency, return on equity and capital adequacy found greater than the maximum coefficient of variation. on other hand coefficient of variation of credit risk is below zero. This implied that both dependent and independent variables found far away from central tendency except return on asset which is very closed to central tendency. This means that there is no established relationship between independent and dependent variables. An interest rate commission agent bank was therefore not affected by credit risk and liquidity crunch.

The canonical correlation is interpreted by the level of significance, the size of canonical correlation and the magnitude of redundancy index. To further investigate the relationship between independent variables, credit risk and liquidity crunch, and dependent variable, AIRCABS, a simple statistical correlation is drawn in the following tables 5.8–5.10.

5.3.1. Level of significance of canonical correlation

Table 5.8: Linear combination for canonical correlation

Covariate	Deposit run	Credit crunch	Liquidity Risk	Non-performing Asset	Credit risk	Commodity Price shock
Non-interest income	-0.287	0.718	-0.264	-0.0685	-1.85	-0.283
	0.778*	0.484*	0.796*	0.946*	0.085*	0.781*
Bank efficiency	-0.354	-0.224	1.332	-0.965	-1.628	-0.247
	0.728*	0.826*	0.204*	0.351*	0.126*	0.808*
Return on asset	0.536	0.9507	-0.878	-0.361	-0.503	-0.908
	0.6*	0.358*	0.395*	0.723*	0.623*	0.379*
Return on equity	-1.059	0.935	-0.653	0.265	0.939	0.226
	0.307*	0.366*	0.524*	0.795*	0.363*	0.824*
Capital adequacy	0.613	0.758	-0.487	-0.214	-0.575	-0.023
	0.55*	0.461*	0.634*	0.834*	0.575*	0.982*

*Ratio of t-value with non-significant $P > |t|$

As indicated in table 5.8, the t-value, followed by t-distribution to test the null hypothesis that canonical coefficient of independent and dependent variables were zero. Since the probability of t-statistics was greater than the alpha level (.05), the canonical correlation coefficient between independent and dependent variables were assumed zero. This in turn implies no established linear relationship between independent variables, credit risk and liquidity crunch, and dependent variables, Aircabs.

Accordingly, neither items on the independent side nor on the dependent sides were correlated with one another. The null hypothesis that there was no relationship between credit risk and liquidity crunch on the one hand and Aircabs on the other hand can therefore not be rejected. However, additional analysis to investigate the relationship between independent and dependent variables was conducted.

Table 5.9: Multivariate tests of significance

Test Name	Value	Approx. F	Sig. of F
Pillais	1.24510	65.00	.839*
Hotellings	2.66393	37.00	.880*
Wilks	.17734	38.00	.856*
Roys	.65825		

*non-significant $P > .05$

The result indicated above in table 5.9 is a separate test of each canonical function that all canonical roots evaluated as non-significant and the model did not fit the data according to multivariate criterion report of Pillais, Hotellings, Wilks and Roys.

Table 5.10: Dimension Reduction Analysis

Canonical function	Wilks L.	F	Sig. of F
1 TO 5	.17734	.68525	.856*
2 TO 5	.51892	.37308	.989*
3 TO 5	.69149	.36651	.965*
4 TO 5	.87344	.27999	.941*
5 TO 5	.97734	.15070	.862*

*non-significant $P > 0.05$

In table 5.9 the multivariate statistical test shows that the model was not generally a fit model and the extracted five canonical roots in table 5.10 did not significantly correlate and were not dependent on one another.

Generally, all the statistical results showed that test of canonical correlation between independent, credit risk and liquidity crunch, and the dependent variables, AIRCABS, have insignificant relationship. Therefore, the null hypothesis of the research study is accepted.

5.3.2. The magnitude of canonical correlation

The significant level of canonical function is based on the size of canonical correlation. Though no accepted rules are established either to accept or reject the size of canonical correlation, the research study is based on the significance level of multivariate test and factor analysis.

To run factor analysis the sampling adequacy and model fit test are conducted using Kaiser-Meyer-Olkin and Bartlett's test as follows:

Table 5.11: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.320
Bartlett's Test of Sphericity	Approx. Chi-Square	34.657
	Df	45
	Sig.	.868

As indicated in table 5.11 the sampling adequacy is below the minimum requirement .60 and model fit test of Bartlett's test of chi-square found insignificant at $P=.868$. The data was not suited to proceed factor analysis because there was no relationship between independent variables, credit risk and liquidity crunch, and dependent variables, AIRCABS.

5.3.3. Redundancy measure of share variances

As indicated in the table 5.12, the shared variance account for 65.83% of total shared variances between the canonical variates. However, squared canonical correlation did not represent the variance extracted from the sets of variables except the variance shared by the linear composites of the sets of dependent and independent variables (Alpert & Robert, 1972). Therefore, instead of squared canonical correlation, redundancy index is calculated to use as a measure of shared variance as proposed by Lambert and Durand (1975).

Table 5.12: Redundancy index and effect of shared variance

Root no	Canonical Correlation	Square Correlation (R_c^2)	Effect size index(1- Wilks λ)	Redundancy index*
1	.81132	.65825	.82266	.1639
2	.49957	.24957	.48108	.0621
3	.45641	.20831	.30851	.0519
4	.32605	.10631	.32655	.0265
5	.15053	.02266	.02266	.0056
Amount of shared variance (SV)				24.902%

*(SV) (R_c^2)

The redundancy index which measures the amount of shared variance in the dependent variables, which is explained by independent canonical variate, is less than 10% of variance in their function except for the first canonical function which is less impressive to interpret the corresponding canonical function since the overall model was insignificant.

The proportion of variance shared between the variable sets across all functions is 82.27% for full model which is higher than the first squared canonical correlation, 65.83% ($=.81132^2$), even though the sum of squared canonical correlation effect size is always greater than the full model effect (Sherry & Henson, 2005). This implies that the second function was not created after the first has been explained by as much variability as observed variables. This indicates that no relationship was found between variate of credit risk and liquidity crunch on the one hand and variate of AIRCABS on the other hand.

Because of insignificant canonical correlation between independent and dependent variables, the model did not fit the data and further interpretation of canonical root and redundancy index would not reveal the significant size of original variables in canonical correlation using factor analysis.

As the result of a statistical test, the null hypothesis of the research study, credit risk and liquidity crunch have no impact on AIRCABS, was accepted.

5.3.4. Individual perception of credit risk and liquidity crunch and AIRCABS survey questionnaires

As depicted in table 5.7, dispersion of variables of credit risk and liquidity crunch and AIRCABS relative to the mean showed high variability. Most of variables' proportion, standard deviation to the mean, that should have been less than 1 revealed no relationship between independent variables, credit risk and liquidity crunch (CRLC), and dependent variables, AIRCABS. Since we found no relationship between the independent and depend variables quantitatively, the suit of individual survey participants' perception with the point of survey question based on the coefficient of variation (CV) cut off point below .30 fitted with the point of independent and dependent variables utilised in predicting their relationship in real world practice based on audited commercial banks' financial statements. Accordingly, all survey participants' perception whose CV less than or equal to .30 strongly agreed with point of questions except survey questionnaires, CRLC-Q3 (CV.34), CRLC-Q9 (CV .33), CRLC-Q14 (CV .33), CRLC-Q16 (CV .33), AIRCABS-Q1 (CV.34) and AIRCABS-Q9 (CV .36), whose survey participants' perception deviated from central tendency.

The coefficient of variations calculated for all survey questionnaires were very close to zero, as the individual survey participants' perception is close to the central mean. Since all survey instruments assessed by the individual survey participants enhanced the contents of independent and dependent variables that are applied in quantitative analysis, the mix of individual survey participants' perception with quantitative analysis of financial statement showed credit risk and liquidity crunch have no impact on AIRCABS.

Therefore, the null hypothesis that says credit risk and liquidity crunches have no positive effect on AIRCABS accepted.

Generally, credit risk and liquidity risk did not affect performance of AIRCABS. However, traditional banks' non-performing asset affected the bank's profitability negatively (Almekhlafi, Alemkehlafi & Hu, 2016). This implies that in traditional banking, the credit risk affected the bank's profitability negatively. As the bank's exposure to credit risk increased the bank profitability decreased. As a traditional bank's exposure to credit risk increases the bank exposure to liquidity risk also increases. Liquidity risk therefore also negatively affected the bank's profitability (Khan & Syed, 2013). This implies that holding customer fund as an asset on

the bank balance sheet exposes the bank to credit risk and liquidity risk. An interest rate commission agent bank did not hold customers' fund as an asset on the bank balance sheet. Though the loan transaction is carried out on the liability side of the bank balance sheet, the loan management is held on the off-balance sheet for the convenience of the administration by the agent bank.

5.4. STATISTICAL RESULT OF INVESTOR LOAN FUNDING AND DISCRETE MARKET DEPOSIT INTEREST RATE INCENTIVE

Investor loan funding prediction of sustainability and profitability of AIRCABS and discrete market deposit interest incentive prediction of stable deposit mobilisation were analysed based on audited financial statement of commercial banks in Ethiopia to answer the question of the following research hypothesis.

H1: Investors loan funding has a positive effect on profitability and sustainability of an interest rate commission agent bank

H2: Discrete market deposit interest rate incentive has a positive effect on stable deposit mobilisation in bank

5.4.1. Model fitting information

The model fitting information details the dependent and independent variables together with control variables to find the final model. To identify the relationship between sustainability and profitability of AIRCABS and investor loan funding, identifying the risk related within the predictor and predicted variables is vital (Bayaga, 2010). Analysing the risk between independent and dependent variables using multinomial logistic regression helped to identify the overall relationship.

Table 5.13 and table 5.14 detail the model fitting information of sustainability and profitability of AIRCABS, which is predicted by investor loan funding together with its control variables, such as bank efficiency, return on asset, return on equity and capital adequacy. The chi-square (8.912) in table 5.13 and chi-square (17.323) in table 5.14 which were the difference between -2Log-likelihoods of the null model and the final model are significant at $P = .003$ and $P = .000$ respectively. Therefore, the model fitted the data better and accurately than a null model. The value of AIC and BIC, which are information theory based on the significance of model fitting

were closed to -2 Log Likelihood both in table 5.13 and table 5.14. The closeness in distance among AIC, BIC and -2 Log Likelihood implies that the likelihood of the models is to the true expected value. The null hypothesis that can thus be stated is that there is no difference between the model without independent variables and the model with independent variables was rejected and the alternative hypothesis (H1 and H2) of the research study accepted.

Table 5.13: Model Fitting Information of profitability and sustainability of AIRCABS

Model	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC	BIC	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	23.930	24.703	21.930			
Final	17.018	18.563	13.018	8.912	1	.003

Table 5.14: Model Fitting Information of stable deposit

Model	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC	BIC	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	28.734	29.778	26.734			
Final	13.411	15.500	9.411	17.323	1	.000

5.4.2. Goodness-of-fit

Table 5.15 reported further evidence of statistical insignificant level of Pearson and deviance goodness-of-fit for model. The Pearson and deviance for sustainability and profitability of AIRCABS and stable deposit were the difference between the current model and the full model whose null value were .376 and .525 (in table 5.15) and .899 and .966 (in table 5.15) respectively greater than p-value (0.05) made the model a good overall fit to the data and predicted probabilities that did not deviate from the observed probabilities to the extent that binomial distribution did predict.

The independent ways by which independent variables predict the dependent variables using Pearson and deviance in table 5.15 is based on the amount of information in the data that helps to estimate the value of unknown population parameters were 14(df) and 19(df) respectively.

Insignificant of the goodness-of-fit model implied that independent variables, investor loan funding together with its control variables, predicted the dependent variables, sustainability and profitability of AIRCABS, as the insignificant result of Pearson and deviance stated in table 5.15. On the other hand, the independent variables, discrete market deposit interest rate incentive, predicted the dependent variables, stable deposit mobilisation, as the insignificant result of Pearson and deviance stated in table 5.15.

Table 5.15: Goodness-of-Fit

Profitability and sustainability of AIRCABS				Stable deposit		
	Chi-Square	df	Sig.	Chi-Square	df	Sig
Pearson	15.029	14	.376	11.675	19	.899
Deviance	13.018	14	.525	9.411	19	.966

5.4.3. Pseudo R-Square

Table 5.16 reported Pseudo R-Square results of the Cox and Snell, Nagelkerke and McFadden measures of effect size, which are commonly used in multiple regressions, approximately computed for multinomial logistic regression. The higher pseudo R-Square that approached to 1 is therefore considered a better fit. In this case, table 5.16 reported Nagelkerke (.572) is higher value than Cox and Snell (.427) and McFadden (.406) for profitability and sustainability of AIRCABS. Similarly, for stable deposit, Nagelkerke (.780) is higher value than McFadden (.648) and Cox and Snell (.562). The highest value of Pseudo R-Square that showed by Nagelkerke in table 5.16 indicates the relationship between the predictor and predicted variables was strong. Furthermore, 40.6% up to 57.2% and 56.2% up to 78% of the variability were explained by independent and dependent variables used in the model respectively.

Table 5.16: Pseudo R-Square

Profitability and sustainability of AIRCABS		Stable deposit
Cox and Snell	.427	.562
Nagelkerke	.572	.780
McFadden	.406	.648

5.4.4. Likelihood Ratio Tests

It is a test for obtaining likelihood of observations with predictor variables considered in the model. Though similar statistical results of the null and full models in the model fitting information reported in table 5.13 and table 5.14, the likelihood ratio tests in table 5.17 and table 5.18 components of independent variables compared to the full model and each predicting independent variables meaningfully contributed to the full effect. According to the statistical result, the independent variables such as investor loan funding and discrete market deposit interest incentive together with their independent control variables significantly contributed to the effect of profitability and sustainability of AIRCABS and stable deposit mobilisation respectively. The chi-square (8.912) in table 5.17 and chi-square (17.323) in table 5.18 were significant at $p=0.003$ and $p=0.000$ respectively. This indicated that the independent variables, such as investor loan funding, financial deepening, per capita income, growth domestic saving to GDP, total private investment to bank deposit and management efficiency, have created strong relationships with dependent variables, profitability and sustainability of AIRCABS as stated in table 5.17. On the other hand, table 5.18 displays the independent variables such as discrete market deposit interest incentive, special deposit ratio, average deposit interest rate, deposit interest incentive rate, efficiency of deposit utilisation ratio and deposit interest payment capacity have created strong relationship with dependent variable, stable deposit.

Table 5.17: Likelihood Ratio Tests of profitability and sustainability of AIRCABS

Effect	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	23.799	24.572	21.799	8.781	1	.003
Investor loan funding*Financial deepening * Per capita income * Growth domestic saving to GDP * Total private investment to bank	23.930	24.703	21.930	8.912	1	.003

deposit * Management efficiency						
The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.						

Table 5.18: Likelihood Ratio Tests of stable deposit

Effect	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	19.890	20.935	17.890	8.479	1	.004
Special deposit ratio * Average deposit interest rate * Discrete market deposit interest incentive * Deposit interest incentive rate * Efficiency of deposit utilisation ratio * Deposit interest payment capacity	28.734	29.778	26.734	17.323	1	.000
The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.						

5.4.5. Parameter estimates

Tables 5.19 and 5.20 show outcomes of multinomial logistic coefficient (B), standard error, Wald statistics, significant level, odd ratio (Exp (B)) and confidence interval of odd ratio.

The models estimate the likelihood of sustainability and profitability of AIRCABS occurring relative to the likelihood of no sustainability and profitability of AIRCABS occurring. Similarly, the likelihood of stable deposit mobilisation estimated relative to likelihood occurrence of no stable deposit mobilisation. The model therefore predicted the dependent variables using independent variable based on the magnitude of the parameter estimator with the coefficient corresponding to the odd ratio.

As depicted in table 5.19 a one unit increment of each independent variable, investor loan funding together with its control variables such as financial deepening, per capita income, growth domestic saving to GDP, total private investment to bank deposit and management efficiency, increased the likelihood of predicting sustainability and profitability of AIRCABS by 111.242 times. Similarly, in table 5.20 a one unit increment of each independent variable, discrete market deposit interest incentive together with control variables such as deposit interest incentive rate, average deposit interest rate, special deposit, efficiency of deposit utilisation, deposit interest payment capacity, increased the likelihood of predicting stable deposit mobilisation by 205.965 times. In table 5.19 and table 5.20, the odd ratios (Ext (B)) associated with each predictor increased and became greater than 1.0, which indicated that the likelihood of dependent variables strongly predicted by the independent variable. As depicted in table 5.19 and table 5.20, as the coefficient fare away from zero, the predictor variable has a high influence in predicting the logit which is what is being predicted and is the likelihood of the outcome variables. The WALD statistical test (5.228), which is significant at $P=0.022$ in table 5.19 and WALD statistics test (4.217), which is significant at $P=.04$ in table 5.20 increased the model fit to the data sufficiently. This assured that the individual predictors significantly contributed for the improvement of the model and the parameter is useful to the model (Bewick, Cheek & Ball, 2005 and EI-HABIL, 2012).

Table 5.19: Parameter Estimates of return on capital

Profitability and sustainability of AIRCABS ^a		B	Std. Error	Wald	Df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Roc	Intercept	-5.048	2.274	4.928	1	.026			
	Investor loan funding *Financial deepening * Per capita income * Growth domestic saving to GDP * Total private investment to bank deposit * Management efficiency	111.242	48.651	5.228	1	.022	2.051E+48	7944764.170	5.293E+89
a. The reference category is: No profitability and sustainability of AIRCABS									

Table 5.20: Parameter Estimates of stable deposit

Stable deposit ^a		B	Std. Error	Wald	Df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Stable deposit	Intercept	-5.458	2.629	4.310	1	.038			
	Discrete market deposit interest incentive * Deposit interest incentive rate * Average deposit interest rate * Special deposit ratio * Efficiency of deposit utilisation ratio * Deposit interest payment capacity	205.965	100.297	4.217	1	.040	2.816E+89	11927.027	6.647E+174
a. The reference category is: No stable deposit.									

The confidence interval (95%), which is the interval where the true effect lies, was superior level though confidence interval that didn't include the null value (1) was greater than 1 and found significant. This implied that when exposed to risk, likelihood of having sustainability and profitability of AIRCABS in table 5.19 and stable deposit in table 5.20 more increased than when an event is not exposed to risk. The odd ratio was better than superior to 1, which in turn indicated better likelihood of predictors that predicted the dependent variables. The combination of independent variables selected to predict the dependent variables were efficient. As evidenced by table 5.13 up to table 5.20 the dependent variables significantly created strong relationship with dependent variables. The models also predicted 87.5% and 90.5% correctly as indicated in tables 5.21 and 5.22 respectively. So, disregarding abnormally wide confidence interval, the independent variables displayed in table 5.19 and table 5.20 efficiently predicted the respective dependent variables.

5.4.6. Classification table

Tables 5.21 and 5.22 show the classification of how well the full model correctly predicts observed outcome of yes/no profitability and sustainability of AIRCABS and yes/no stable deposit in a bank respectively. Therefore, the overall accuracy of the models predicted 87.5% and 90.5% as stated below for profitability and sustainability of AIRCABS and stable deposit respectively.

Table 5.21: Classification

Profitability and sustainability of AIRCABS			
Observed	Predicted		
	Profitability and sustainability of AIRCABS	No profitability and sustainability of AIRCABS	Per cent Correct
Profitability and sustainability of AIRCABS	6	1	85.7%
No profitability and sustainability of AIRCABS	1	8	88.9%
Overall Percentage	43.8%	56.3%	87.5%

Table 5.22: Percentage classification of stable deposit

Observed	Predicted		
	No stable deposit	stable deposit	Per cent Correct
No stable deposit	13	1	92.9%
Stable deposit	1	6	85.7%
Overall Percentage	66.7%	33.3%	90.5%

5.4.7. Comparing by chance accuracy with model accuracy rate

The proportional by chance accuracy rate computed based on the proportion of yes/no profitability and sustainability of AIRCABS and Yes/no stable deposit by squaring and summing proportion of each cases such that for profitability and sustainability of AIRCABS calculated as $.438^2 + .563^2 = 0.508813$ in table 5.23 and for stable deposit calculated as $.333^2 + .667^2 = 0.555778$ in table 5.24 respectively. The standard set to characterise multinomial logistic regression model as useful is to improve the overall percentage accuracy by more than 25 % the proportion by chance accuracy. So, according to the proportional by chance accuracy criteria the percentage of by chance accuracy of the model was 63.60% ($1.25 \times 0.508813 = 63.60\%$) for profitability and sustainability of AIRCABS though the model accuracy rate was 87.5% as stated in table 5.21. whereas for stable deposit the proportional by chance accuracy calculated as 69.47% ($1.25 \times 0.555778 = 0.6947225$) though the model accuracy rate was 90.5% as stated in table 5.22. The model accuracy rate over by chance accuracy implied that the employed multinomial logistic regression model was useful.

Table 5.23: Case Processing Summary of profitability and sustainability

		N	Marginal Percentage
Profitability and sustainability of AIRCABS	Profitability and sustainability of AIRCABS	7	43.8%
	No profitability and sustainability of AIRCABS	9	56.3%
Valid		16	100.0%
Missing		5	
Total		21	
Subpopulation		16 ^a	
a. The dependent variable has only one value observed in 16 (100.0%) subpopulations.			

Table 5.24: Case Processing Summary of stable deposit

		N	Marginal Percentage
stable deposit	No stable deposit	7	33.3%
	stable deposit	14	66.7%
Valid		21	100.0%
Missing		0	
Total		21	
Subpopulation		21 ^a	
a. The dependent variable has only one value observed in 21 (100.0%) subpopulations.			

The result of multinomial logistic regression to predict profitability and sustainability of AIRCABS using predictors variables such as investor loan funding together with its control variables, financial deepening, per capita income, growth domestic saving to GDP, total private investment to bank deposit and management efficiency, showed significant. The alternative hypothesis that stated investor loan funding has a positive effect on sustainability and profitability of AIRCABS was therefore accepted by rejecting the null hypothesis that there is no difference between a model with and without independent predicting variables to predict the dependent variables.

Similarly, the result of multinomial regression to predict stable deposit using predictor variables, such as discrete market deposit interest incentive together with its control variables such as deposit interest incentive rate, average deposit interest rate, special deposit ratio, efficiency of deposit utilisation ratio and deposit interest payment capacity showed to be significant. So the alternative hypothesis that stated that discrete market deposit interest incentive has a positive impact on stable deposit mobilisation in case of an interest rate commission agent bank later pools depositors from deposit position to investor position to benefit the credit price in terms of deposit interest rate from the fund already invested by a bank where the money deposit established accepted by rejecting the null hypothesis that there is no difference between models with and without independent predicting variables to predict the dependent variables.

5.4.8. Individual perception on investor loan funding and discrete market deposit interest incentive

In quantitative measurement the coefficient of variation calculated as standard error to its parameter estimator value. In table 5.19 and table 5.20, to investigate the relationship between investor loan funding with that of sustainability and profitability of AIRCABS variables, the coefficient of variation calculated as .44 at significant level ($P=.022$) whereas to investigate the relationship between discrete market deposit interest rate incentive with that of stable deposit variables, the coefficient of variation calculated as .49 at significant level ($P=.040$). The coefficient of variation calculated below the maximum threshold .50 helped to assimilate the perception of individuals' survey participants with the real practice depicted based on financial statements.

To investigate the degree of agreement and disagreement, the cut-off point for coefficient of variation (CV) to interpret survey instrument of investor loan funding (ILF) and discrete market deposit interest incentives considered below .50 and above this ceiling level data interpreted with caution. Accordingly, all survey participants strongly agreed with the point of survey questions except survey questions ILF-Q3 (CV .55) and ILF-Q4 (CV .85), which were a little bit far from central tendency.

Generally among all survey respondents, 79% of individual participants' perception on investor loan funding survey questionnaires agreed, whereas, 88% of individual participants' perception on discrete market deposit interest incentive questionnaires agreed with majority point of questions in survey instruments.

In quantitative analysis significant result found that investor loan funding predicted and created strong relationships with sustainability and profitability of AIRCABS. On the other hand, discrete market deposit interest incentives predicted and created a strong relationship with stable deposit mobilisation. The coefficient of variation calculated based on the quantitative data showed that investor loan funding was a true predictor of sustainability and profitability of AIRCABS and discrete market deposit interest rate incentive was a true predictor of stable deposit mobilisation variables. The coefficient of variation calculated based on perception of individual survey participant showed almost below the coefficient of variation calculated in quantitative measurement. This implied that the individual perception to the point of survey question highly supported the result found in quantitative measurement. Therefore, alternative hypothesis (H1 and H2) accepted.

Investor loan funding is one of the determinants of an interest rate commission agent bank's performance. As the fund provider increases, the performance of the agent bank also increases. The funding source of the agent bank is investor funds and depositors' funds. In traditional bank deposit mobilisation affect bank profitability positively (Akuma, Doku & Awer 2017). In traditional banks the funding source is customer deposits and increasing the deposit interest rate increases the money deposited at the bank. Increasing the money deposited at the bank indirectly increases the bank's profitability (Tuyishime, Memba & Mbera 2015). Applying discrete market deposit interest rate incentive therefore helps to mobilise deposit at a traditional bank, which indirectly increases the bank's loan, which increases the bank's profitability. Mobilising more deposit from time to time helps traditional bank to maintain its sustainability and profitability in the market. This implies that traditional bank mobilises loan and deposit having borne credit and liquidity risks. This affected the banks' sustainability and profitability in the market in the short run as well as in the long run. However, an interest rate commission agent bank transfers credit risk and liquidity crunch to investor and entrepreneur to maintain its sustainability and profitability in the market.

In traditional bank non-interest income positively affected the bank profitability (Al-Tarawheh, abukhalaf & Assaf, 2017). Similarly interest rate commission income of an interest rate commission agent bank has a direct association with profitability of the agent bank. The net interest margin of an interest rate commission agent bank is an interest rate commission. Since the agent bank did not have an interest expense, an interest rate commission income directly increases the profit and capital of the agent bank.

5.5. CHAPTER SUMMARY

In conventional banking activities banks either retain or transfer credit and liquidity risks to other financial institutions which later have the same impact on the overall industry. Bank sells customer deposit holding as an asset on its balance sheet to get credit price, which led them exposed to toxic asset, non-performing asset or contagion and short of liquidity problems. Once the bank is exposed to credit risk they are indirectly affected by hidden financial cost, which the bank was paying interest to depositors on uncollectible loan already disbursed from the depositors' accounts.

To increase sustainability, profitability and stable fund of AIRCABS by transferring credit risk and liquidity crunch to investors and entrepreneurs, AIRCABS developed (Tessema & Kruger, 2015). This can be done by empowering money depositor to exercise their full right for the use of their money to get reasonable credit price rather than offering unreasonable deposit interest rate that forces them to join informal market.

AIRCABS transfers credit risk and liquidity crunch to investors and entrepreneurs through its lending strategies, 360-degrees, 180-degrees and 90-degrees lending strategies (Tessema & Kruger, 2015 and 2016).

The reliability and viability of AIRCABS are investigated, based on the individual survey participants' perception and financial data.

Before getting into analysis of individual perceptions, the validity and reliability of survey questionnaires were tested using Cronbach alpha, Kuder-Richardson, descriptive statistics and factor analysis and significant results found. The individual survey participants' perception supported the empirical analysis result, which is based on financial statements of all commercial banks in Ethiopia.

Since AIRCABS administers the fund of investor loan funding to entrepreneur by transferring credit risk and liquidity crunch to investor and entrepreneurs, credit risk and liquidity crunch has no effect on the sustainability and profitability of AIRCABS. This idea was supported by testing independent and dependent variables of the null hypothesis (H_0) applying canonical correlation. Accordingly, the impact of credit risk and liquidity crunch (deposit run, credit crunch, liquidity risk, non-performing asset and credit risk) on AIRCABS (non-interest income, bank efficiency, return on asset, return on equity and capital adequacy) investigated and no relationship was found.

The main activity of traditional banking was maximising the net interest margin, which is the proceeds from buying and selling of fund, having borne credit risk and liquidity crunch. However, the main target of AIRCABS is to maximise the agreed interest rate commission from investor loan funding administration and project selection fee. Since AIRCABS does not hold customer fund as an asset on its balance sheet, they are not affected by toxic asset. AIRCABS enables the agent bank to collect loan interest rate commission and fee by transferring liquidity crunch and credit risk to investors and entrepreneurs. This notion is supported by testing the research hypothesis (H1) to investigate the relationship between independent variables, investor loan funding with its control variables such as financial deepening, per capita income , growth domestic saving to GDP , total private investment to bank deposit and management efficiency, and dependent variable, profitability and sustainability of AIRCABS, using multinomial logistic regression. The statistical result showed that investor loan funding together with its control variables predicted sustainability and profitability of AIRCABS. This implies that as the agent bank's efficiency in administering investor loan increases the bank's sustainability and profitability increases. As the result of investment on innovative entrepreneurs' project increases, this in turn increases import substitution products and the country's GDP in general.

As the competition among banks in service excellence increases the likelihood of deposit stability at the origin depository bank decreases. Money deposit of customers is the lifeblood of the traditional banks to maintain its sustainability and profitability in the market specifically and financial stability in general. In most instances, retail deposit, deposited by major society, is more stable than wholesale deposit, deposit by few society, in connection with the benefit of deposit interest rate. As interest rate increases, the interest of small money depositors' increases and thereby stable deposit will be established. Applying a discrete market deposit interest rate incentive on the marginal increment of money deposited therefore incentivises deposit clientele, which in turn enhances the stability of the deposit. This notion is supported by testing the research hypothesis (H2) by investigating the relationship between independent and dependent variables using multinomial logistic regression. The statistical result showed that there was a strong relationship between independent variables, discrete market deposit interest incentive with its control variables such as a special deposit ratio, average deposit interest rate, deposit interest incentive rate, efficiency of deposit utilisation ratio and deposit interest payment capacity, and the dependent variable, stable deposit. This implied that a one unit increment on

discrete market deposit interest rate incentive enables the bank to have a consistent wider margin of deposit, which in turn increases the stability of deposit widely.

In general, AIRCABS is tested using different statistical tools to find internal and external resistance of the model at a buffer stage where the market and economic shock are exhibited. In testing the hypothesis statistical test result of cause and effect relationship found significant. This led us to a conclusion that an AIRCABS is viable as well as reliable.

CHAPTER 6: DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1. INTRODUCTION

In this section the chapters of the thesis are summarised discussing the integrated result of survey questionnaires and quantitative data to grasp the basic gist of the thesis.

The chapter is organised as follows: section 6.2 contains discussion of the chapters. Section 6.3 contains the recommendation. Section 6.4 discusses the conclusion.

6.2. DISCUSSION

In traditional banking, credit risk and liquidity crunch affect the bank's profitability significantly. As the bank's exposure to the credit and liquidity risks increases the bank's profitability decreases. Khan and Syed (2013) found that banks' profitability was negatively affected by liquidity risk. As the bank exposure to liquidity risk increases the bank profitability decreases. Non-performing asset and liquidity gap are the two factors that aggravate the liquidity risk. Non-performing loans affected banks' profitability negatively. Credit risk is therefore negatively associated with the bank's profitability (Almekhlafi, Almekhlafi, Karbo & Hu, 2016). An increased exposure to credit risk reduces the bank's profitability (Kayode, Obamuyi, Owoputi & Adeyefa, 2015). Shifting from traditional banking activities to non-traditional banking activities therefore helps to mitigate credit and liquidity risks. Holding customers' fund as an asset on the bank balance sheet exposes the bank to credit risk and liquidity crunch.

AIRCABS, where the bank does not hold the customer's fund as an asset on its balance sheet, avoids bank toxic asset, which indirectly enhances the bank's capital adequacy. The bank services rendering as an agent for the fund provider to administer the loan after it has been disbursed to an entrepreneur helps to avoid toxic asset, which in turn enhances the agent bank's performance.

As discussed, the research statistical analysis in section 5.2, credit risk and liquidity crunch have no effect on AIRCABS as evidenced by quantitative and individual survey participant's perception results.

As illustrated in table 5.7, descriptive statistics results for credit risk and liquidity crunch and AIRCABS to investigate the relationship between credit risk and liquidity crunch on the one hand and AIRCABS on the other hand coefficient of variation calculated. Though the maximum coefficient of variation (CV) considered for continuous data was below or equal to .30, variables

that represent the independent variable, credit risk and liquidity crunch, such as deposit run (CV=.63), credit crunch (CV=.67), liquidity risk (CV=1.15), non-performing loan (CV=1.96), and credit risk (CV=-4.45) were found to be greater than the maximum coefficient of variation (.30) whereas dependent variables that represent AIRCABS such as non-interest income (CV=0.93), bank Efficiency (CV=0.48), return on asset (CV=0.17), return on equity (CV=0.43) and capital adequacy (CV=2.63) were found to be greater than the maximum coefficient of variation (.30), except return on asset. The coefficient of variation calculated for independent variable, credit risk and liquidity crunch, on the one hand and for dependent variable, AIRCABS, on the other hand were found to be very far away from central tendency, except return on asset variable. This implied that there is no created relationship between credit risk and liquidity crunch on the one hand and AIRCABS on the other hand. This result supported by the result revealed in table 5.8 that there was not any significant relationship between independent variables (deposit run, credit crunch, liquidity risk, non-performing asset, credit risk and commodity price shock) and dependent variables (non-interest income, bank efficiency, return on asset, return on equity and capital adequacy). Furthermore, table 5.9 details the multivariate test result of Pillais, Hotelling, Wilks and Roys for independent variable, credit risk and liquidity crunch, and dependent variable, AIRCABS, and found an insignificant relationship. According to table 5.10 the extracted five canonical roots did not significantly correlate. These results revealed that there was no relationship between the independent variable, credit risk and liquidity crunch, and dependent variable, AIRCABS. The results quantitatively concurred with the individual survey participants' perception results.

AIRCABS can protect the bank from financial crisis and bring continuous sustainable profits.

The bank business models that expose the bank to credit risk and liquidity crunch during financial crisis remain a disputed since the late 1990s (Blundell-Wignall & Roulet, 2013). Existing bank business models didn't transfer the bank's credit risk and liquidity crunch to individual investors and entrepreneurs; rather they compelled the bank to hold customer deposit as their own asset on their balance sheet to retain credit risk and liquidity crunch.

The main purpose of AIRCABS is to increase the bank's profitability by shifting credit risk and liquidity crunch to individual investors and entrepreneurs. Non-interest income is more volatile than interest income (DeYoung & Roland, 2001). Though the bank interest rate commission is considered as non-interest income, it is not volatile like the traditional bank's non-interest income. Saunders, Schmid and Walter (2016) found no evidence that the share of non-interest

income is associated with lower profitability or with higher systemic risk. However, Al-Tarawneh, abu Khalaf, and Assaf (2017) found that non-interest income increases equity capital adequacy which in turn affect the bank profitability positively. Since the agent bank collects interest rate commission until loan settlement, the model enables the bank to have sustainable profit up to the loan of entrepreneur settled and did not affect by systematic risk. As the bank handles a number of investor loan funding to entrepreneurs, its profitability and sustainability in a market increases.

To maintain sustainability of the bank in a market, banks must manage their disbursed loans to their borrowers to avoid non-performing asset, which is created either from poor credit management of the debtor (Al-Shawabkeh & Kanungo, 2017) or interbank lending without considering the counter party risks. To avoid asset contagion in financial institutions, banks shall adopt AIRCABS in order to prone inter-bank loans market by mobilising loan and deposit directly from society and by dealing investor's fund to entrepreneurs and administering the fund after disbursement on behalf of an investor to collect an agreed percentage of commission from investor loan funding credit price.

To avoid bank's toxic asset, traditional banks shift to non-traditional banking activities that enables them to collect non-interest income. Transferring from traditional banking to non-traditional banking activities has global importance (Wen & Yu, 2013). Though the non-traditional bank collects non-interest income, the income from this source per se commission, fee and charge are volatile and sensitive to market risk. Competition among traditional banks makes the non-interest income volatile and exposes the bank to systematic risk (Jaffar et al, 2014). However, an interest rate commission, which based on the loan interest rate offers to entrepreneurs ,is not volatile like the commissions collected by traditional bank' service selling. Therefore, an interest rate commission agent bank is not exposed to systematic risk.

Traditional banks shift credit risk by moving risky loan from balance sheet and transfer it to securitise their asset through a legally established organ, but the reduction of asset quality (Kadioglu, Telceken & Ocal 2017) makes securitisation a cause of financial crisis. However, AIRCABS enables the agent bank to manage quality loan as result of deep analysis of the feasible project of an entrepreneur and the entrepreneur's management skill to mitigate the likelihood of the loan defaults would be very rare. When applying AIRCABS business model, proper management of the business and sufficient knowledge of the model helps to mitigate business risk (Lund & Nielsen, 2014). To properly implement an interest rate commission agent

banking business model the agent bank needs to equip highly skilled staff with perfect knowledge of the business model.

The bank that adopt an interest rate commission agent banking model would develop the three lending strategies such as 360 degrees ,180 degrees and 90 degrees by which the agent bank transfers credit risk and liquidity crunch to investors and entrepreneurs improving profitability and sustainability (Tessema & Kruger 2015 and 2016). However, AIRCABS either can works as a unit of traditional bank or independently in full-pledged office of an interest rate commission agent bank. So applying an interest rate commission agent bank with other bank business model enables the bank to be more profitable. AIRCABS model fulfils the benefit of investors and entrepreneurs without affecting the bank's organisational incentive, culture, structure and skills of employees to enhance mutual benefit of parties and economic development either in the short run or the long run. AIRCABS renders high quality of cutting edge risk mitigating services to enhance profitability of the bank having sustainable interest commission income until the loan is settled.

The profit and loss sharing mandate of an Islamic banking system enables it to better resist a banking crisis than the conventional banking system is able to do (Iqbal, 2013). However, AIRCABS enhances the stability of the bank by collecting uninterrupted commission without any financial cost by transferring credit risk and liquidity crunch to investors and entrepreneurs. Since an interest rate commission agent bank administers the investor's loan funding, it maintains the mutual benefit of investors, entrepreneurs and the agent bank itself. Traditional banks engaged in lending customer deposit considering the fund as its own asset on its balance sheet can shift credit risk and liquidity crunch using an interest rate commission agent bank at buffer stage where there is a signal for an economic downturn. This can be done by inviting depositors to move to investor position to benefit the credit price, in excess of agent bank interest rate commission. Thereby the bank shifts to agent position to administer the customer fund already invested by the bank.

The traditional bank faces a solvency problem as a result of holding toxic or impaired asset, which is the source of the financial crisis that led it to insolvency and liquidity problems. However, AIRCABS enables the agent bank to transfer credit risk and liquidity crunch to investor and entrepreneur. Transferring credit risk and liquidity crunch by agent bank to investor and entrepreneur improves the agent bank's profitability and sustainability without paying interest rate expense into the deposit account and avoids toxic assets or contagions. The main duty of

an interest rate commission agent bank is that it delivers quality service to investors and entrepreneurs to properly manage investor loan funding to entrepreneur from loan process inception up to settlement.

As competition among traditional bank increases, banks prefer lending customers deposit using higher collateral requirements, without considering the borrowers' capacity to repay their loan obligation. As loans became default, loan cost increases beyond the debtor capacity to repay the loan in the specified period. Customers whose repayments exceed their repayment capacity would borrow from informal credit organs where the source of money could be illegitimate. Capitalising loan without having proper cash flow would ultimately lead to default loan and thereby lead to loses of all properties held in the name of the debtor. This can also increase the circulation of currency in money laundering activities to make loan from illicit fund sources. However, under interest rate commission agent banking system entrepreneur and investor know each other or at least the bank knows one of them, so it would be easy for the agent bank to enhance know your customer principle to avoid trade-based money laundering (Chhina, 2014) and terrorism financing. AIRCABS has not created any loop hole to practise any predatory lending behaviour since every step of it is followed by fund provider.

The primary aim of an agent bank is to maintain mutual benefit of parties engaged in loan contract through quality management and setting agreed loan interest rate.

When borrowers' loans default, it brings credit risk to the bank, which in turn causes liquidity crunch. A bank loan borrower whose exporting items' price fail because of commodity price fluctuation contributes to increase bank non-performing loans.

A major profit line of traditional bank is an interest rate collected from loan. Mobilising deposit in order to disburse loan is a primary objective of traditional bank. Deposit mobilisation has a direct positive impact on performance of a bank (Akuma et al, 2017). A positive change in deposit interest rate affects the level of deposits collected and later on bank profitability. Deposit mobilisation and profitability of the bank have direct positive relationship (Tuyishime et al, 2015). So as deposit interest rate increases the deposit mobilisation increases which indirectly increase the bank profitability through loan and advances. An interest rate commission agent bank mobilises fund from investor and depositors to disburse it to entrepreneur and to administer it after disbursement.

As discussed, the research statistical analysis in section 5.3, investor loan funding has a strong positive effect on profitability and sustainability of AIRCABS. The results found quantitatively concurred with the individual survey participants' perception result. The factors that predict the agent bank profitability and sustainability, which support to increase investor loan funding, were financial deepening, per capita income, growth domestic saving, private investment and management efficiency. According to tables 5.13 and 5.14 the model fitting information of sustainability and profitability of AIRCABS and stable deposit mobilisation were found significant at $p=0.03$ and $p=0.00$ respectively. These implied that the model fitted the data better than a null model. The Pearson and deviance for sustainability and profitability of AIRCABS and stable deposit were the difference between the current model and the full model whose null values were .376 and .525 (in table 5.15) and .899 and .966 (in table 5.15) respectively greater than p -value (0.05) made the model a good overall fit to the data. Table 5.16 reported Pseudo R-Square results of the Cox and Snell, Nagelkerke and McFadden measures of effect size, which are commonly used in multiple regressions, approximately computed for multinomial logistic regression. So the higher pseudo R-Square that approached to 1 is considered a better fit. In this case table 5.16 reported Nagelkerke (.572) is higher value than Cox and Snell (.427) and McFadden (.406) for profitability and sustainability of AIRCABS. Similarly for stable deposit, Nagelkerke (.780) is higher value than McFadden (.648) and Cox and Snell (.562). The highest value of Pseudo R-Square that showed by Nagelkerke in table 5.16 indicates the relationship between the predictor and predicted variables was strong. As indicated in tables 5.17 and 5.18 the likelihood ratio test of profitability and sustainability of AIRCABS and stable deposit mobilisation found significant at $p=0.03$ and $p=0.00$ respectively. As depicted in table 5.19 a one unit increment of each independent variable, investor loan funding together with its control variables such as financial deepening, per capita income, growth domestic saving to GDP, total private investment to bank deposit and management efficiency, increased the likelihood of predicting sustainability and profitability of AIRCABS by 111.242 times at significant p -value ($p=0.022$). These results indicated that there is a strong relationship between investor loan funding and sustainability and the profitability of AIRCABS.

The central bank injects fund to the economy to increase investment through bank and withdraws fund from the economy to control inflation and interest rate as the condition required. However, an interest rate commission agent bank administers investor loan funding without paying deposit interest rate into fund suppliers account. Since the fund provider receives compatible credit price,

the will of an investor and entrepreneur that engaged in loan transaction increases. As loan transaction increases, more investors and entrepreneurs exhibited in loan transaction and as a result investment increases which in turn increases GDP. Since an interest rate commission agent bank administers the investors' loan funding, this banking system attracts money holders from informal to formal economic sector.

An interest rate commission agent bank trades off the loan disbursed from the investor account to an entrepreneur on the liability side of the balance sheet by holding the loan amount on the off-balance sheet to maintain the bank's balance sheet size without growth. This safeguards AIRCABS from credit risk, systematic risk, interest rate risk and liquidity risk.

The loan interest rate fixed in the loan contract established by investor, entrepreneur and the agent bank did not affect by market change unless interest rate fluctuation is a condition in the loan contract. Change in interest rate in the market does not affect the agent bank's interest rate commission. In same manner, interest rate commission of an agent bank has no relationship with changes in interest rate risk or idiosyncratic risk.

AIRCABS checks that the loan disbursed applied for the intended purpose stated in the loan contract by the entrepreneur. However, under worst condition where an entrepreneur defaults loan repayment stated on the loan contract the loan disbursed is refunded by selling the collateral or project under investment as an ultimate alternative solution. There is no risk to the agent bank associated with defaulted loan since the bank transferred credit risk to entrepreneurs and investors.

AIRCABS gives an opportunity for investors and entrepreneurs to create their own market with the bank as an agent to collect interest rate commission from investor loan funding credit price.

The loan cost determination of an interest rate commission agent bank is based on the trend of credit price, deposit interest rate in the market, loan administration cost of the bank and current regulation of the central bank. Though, the loan interest rate is finally approved by the agent bank, investor and entrepreneur present their proposed consensus on the loan interest rate which later approved after the agent bank has assessed its cost and benefit from loan administration. So that, the profitability of AIRCABS is affected positively by inflation and operating expense.

As presented in table 5.20, a one unit increment of each independent variable, discrete market deposit interest incentive together with control variables such as deposit interest incentive rate,

average deposit interest rate, special deposit, efficiency of deposit utilisation, deposit interest payment capacity, increases the likelihood of predicting stable deposit mobilisation by 205.965 times at significant p-value ($p=0.04$). Hence, discrete market deposit interest rate incentive has a strong relationship with stable deposit mobilisation.

Until the depositor moves to investor position, the bank uses the fund for investment but later the bank shifts to agent position when the depositors request the bank to shift to investor position to get a proportionate credit price in terms of discrete market deposit interest rate incentive from the investment where the bank has already invested the customer deposit. Since the bank applies discrete market deposit interest rate incentive on the customer deposit per the increment of the deposit volume, the bank is able to mobilise stable deposit through the deposit period as well as the loan period while the depositor shifts to investor position rather than to money depositor. Since an interest rate commission agent bank creates liquidity to an agent bank by providing investment solution to investors, depositors and entrepreneurs, it has higher contribution to the GDP. This notion concurred with Berger and Sedunov (2017) who found bank liquidity creation was statistically, economically, significantly and positively related with the real economic output (GDP). Applying discrete market deposit interest rate incentive and later providing an alternative investment solution to investors enables the agent bank to collect more commission and fees.

Applying discrete market deposit interest incentive has a strong positive relationship with stable deposit mobilisation in the bank. Since money depositors that move to investor position to get proportionate credit price per volume of fund already invested by the bank in alternative investment, the depositor's money stays in the bank as a stable fund till the loan is fully settled.

To mobilise more deposit, traditional bank pays incentive in kind to customer using spot lottery reward. This spot lottery reward does not benefit all customer and the likelihood of customer to be rewarded from the spot lottery is small. However, mobilising deposit incentivising each deposit account using interest rate incentive enables the bank to continuously mobilise more stable deposit to use for loans.

The volume and mix of deposit increases with the increase of interest rates incentives. So applying discrete market deposit interest rate incentive on the depositors' account reduces the gap between loan interest rate and deposit interest and invites depositors to share substantial interest benefit.

Banks that hold customer deposit as their own asset on their balance sheet are exposed to toxic asset or contagion and liquidity problems which consequently lead to banking crisis. Since traditional banks always lacks stable deposit because of high competition among banks and money circulates out of bank to avoid government tax, the lending and borrowing among financial institution spread contagion, which transmit across borders of countries. Unless banks transfer credit risk and liquidity crunch to individual and non-financial institution, the spread of risks to other financial institution affects the overall industry.

Generally, AIRCABS improves the bank's profitability, sustainability and stable deposit mobilisation without financial cost by shifting credit risk and liquidity crunch to investors and entrepreneurs.

6.3. RECOMMENDATION

To implement AIRCABS, the agent bank must have a cutting-edge risk predicting staff, sufficient capital structure and capital employed. It should also be efficient and effective in providing a service to entrepreneurs and investors to maintain mutual benefit to all the parties involved in the contract. Since the agent bank does not pay interest expense on the fund disbursed to an entrepreneur, the agent bank should periodically measure the management efficiency against the interest rate commission collected in the period to reduce the cost related with loan administration.

When the agent bank sells a loan to a new entrant investor the reselling value of the loan should be reasonable according to the market and equivalent to the remaining debt. Whilst the agent bank sells the loan to new entrant investor, it collects a onetime fee from the new entrant investor to cover administration expense. All collateral and investment project should be registered at the government organ in the name of the agent bank to administer the loan up to settlement. Should entrepreneurs fail to continue repaying the loan, the agent bank recruits a new entrant entrepreneur to handle the business by collecting the required repayment amount up to loan settlement without ownership transfer, which is effected by decision of investor and the agent bank.

When investors and entrepreneurs presented at the agent bank for loan transaction, the agent bank should calculate reasonable credit price on the funds disbursed to entrepreneur based on the market, the central bank policy and the agreed price between investors and entrepreneurs.

The agent bank should also declare the true source of the money to avoid money laundering trade financing.

Therefore, it is recommended to implement an interest rate commission agent banking system to avoid banking crisis and enhances bank profitability and sustainability. Because the model works with other model, it enhances efficiency of others bank models by shifting risk to depositors when the banking business reached at buffer stage.

6.4. CONCLUSION

In conventional banking activities banks either retain or transfer credit risk and liquidity crunch to other financial institutions. These then later have the same impact on the overall industry. Since banks sell customer deposits from their own asset on its balance sheet, in most instances banks are exposed to toxic asset, non-performing asset or contagion and short of liquidity problems. Once the bank is exposed to credit risk they are indirectly affected by hidden financial cost, where the bank pays interest to depositors on uncollectible loan already disbursed from the depositors' account.

As illustrated in tables 5.8 to 5.12, the canonical result revealed that there was no relationship between credit risk and liquidity crunch on the one hand and AIRCABS on the other hand. This result also concurred with the individual perception to the point of survey questions. This implies that credit risk and liquidity crunch have no effect on AIRCABS. The statistical results indicated that AIRCABS can increase sustainability and profitability of the agent bank by transferring credit risk and liquidity crunch to the investor and entrepreneur. Deposit run, credit crunch, liquidity risk, non-performing asset and credit risk have therefore no relationship with non-interest income, bank efficiency, return on asset, return on equity and capital adequacy. This proves that credit risk and liquidity crunch had no effect on AIRCABS.

The agent bank stands on three pillars such as efficiency, profitability and sustainability and risk transfer. The agent bank's profitability emanates from commission and fee as return for investor loan funding administration and project selection to an investor respectively. Since the agent bank transfers credit risk and liquidity crunch to investor and entrepreneur, the agent bank sustainability in the market is ensured. Empowering money depositor to exercise their full right for the use of their money deposited to receive reasonable credit price rather than offering unreasonable deposit interest rate that forces them to join into informal market helps to maintain sustainability and profitability of AIRCABS. This helps the agent bank to transfer credit risk and

liquidity crunch to investors and entrepreneurs through lending strategies of 360 degrees, 180 degrees and 90 degrees (Tessema & Kruger, 2015 and 2016).

The individual survey participants' perception is tested by statistical tools such as Cronbach alpha, Kuder-Richardson, descriptive statistics, factor analysis, coefficient of variation and significant result found. The individual survey participants' perception supports the empirical analysis result, which is based on financial statement of all commercial banks in Ethiopia. The research hypothesis is also tested based on financial data of the banking industry in Ethiopia using statistical tools, canonical correlation and multinomial logistic regression, and the positive significant result found.

This model helps banks that run other models to resist financial crisis by shifting their activities into AIRCABS when banks forecasts they would encounter liquidity and credit crisis.

As portrayed in tables 5.13 to 5.24, multinomial logistic regression results revealed that investor loan funding has a strong positive relationship with the sustainability and profitability of AIRCABS and discrete market deposit interest rate incentive also has a strong positive relationship with stable deposit mobilisation. This implies that a one-unit increment of investor loan funding increases profitability and sustainability of AIRCABS. A one-unit increment of discrete market deposit interest rate incentive also increases stable deposit mobilisation.

The main activity of traditional banking is maximising the net interest margin, which is the proceeds from buying and selling of fund, having borne credit risk and liquidity crunch. However, the main target of AIRCABS is maximising agreed interest rate commission from investor loan funding administration and project selection fee from investors. Since AIRCABS does not hold customer fund as an asset on its balance sheet, there is no financial expense. So AIRCABS enables the agent bank to collect loan interest commission and fee by transferring liquidity crunch and credit risk to investors and entrepreneurs. To investigate this fact the relationship between financial deepening, per capita income, growth domestic saving to GDP, total private investment to bank deposit, management efficiency on one hand and profitability and sustainability of AIRCABS on the other hand is tested and positive strong relationship found. This indicates that as the agent bank becomes efficient and effective, investor loan funding increased and thereby sustainability and profitability of AIRCABS increased. As investment on innovative entrepreneurs' project increases, this in turn increases import substitution products and the country's GDP in general.

As competition among banks in service excellence increases the likelihood of deposit stability at the origin depository bank decreases. Money deposit of customers is the lifeblood of the traditional banks to maintain its sustainability and profitability specifically and financial stability in general. In most instances, retail deposit, deposited by major society, is more stable than wholesale deposit, deposit by few society, in connection with the benefit of deposit interest rate. As interest rate increases, the interest of small money depositors' increases and thereby stable deposit is established. This is confirmed by testing the relationship between special deposit ratio, average deposit interest rate, deposit interest incentive rate, efficiency of deposit utilisation ratio, deposit interest incentive payment capacity on one hand and stable deposit on other hand, and a significant positive relationship was found. This indicated that discrete market deposit interest incentive has a positive impact on stable deposit mobilisation in bank.

In general, an interest rate commission agent banking model is viable as well as reliable. This ensures that the model of AIRCABS has internal and external resistance at a buffer stage when market and economic shock is exhibited.

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**APPENDIX A: OFFICIAL ACCEPTANCE LETTER OF INTERNATIONAL JOURNAL
“BANKS AND BANK SYSTEMS”**



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October 13.10.2015

Dear Ameha Tefera Tessema and JW Kruger,

We are very pleased to inform you that your paper titled **“An Interest Rate Commission Agent Banking System”** has been accepted and will be published in the international journal **“Banks and Bank Systems”** (ISSN 1816-7403 (print), ISSN 1991-7074 (online) in the Volume 10, Issue 3, 2015.

The article has been peer-reviewed by the Editorial Board of BBS Journal. Banks and Bank Systems journal is a double blind peer reviewed academic journal since 2006 (the year of journal establishing) and publishes high quality research papers.

Thank you for your submission.

With cordial regards,

Dr. Taras Savchenko

Editor-in-Chief

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APPENDIX A1: OFFICAL ACCEPTANCE LETTER OF 28TH AUSTRALIAN FINANCE AND BANKING CONFERENCE

International Conference participation

09/10/2015 RE: Title: An Interest Rate Commission Agent Banking System

Submission Number: **2647609**

Dear Ameha Tefera Tessema,

The AFBC Review Committee is pleased to inform you that the manuscript listed above has been accepted for presentation at the 28th annual Australasian Finance and Banking Conference to be held at the Shangri-La Hotel, Sydney, on 16-18 December 2015. As part of the acceptance of your paper, you are required to act as a discussant for one other paper in the research area for which your paper has been selected. Please note that this Letter of Acceptance concerns the main AFB Conference on 16-18 December. Information about the PhD Forum on 15 December is provided below.

REGISTRATION Each Conference participant can present only one paper. If more than one of your papers have been accepted for presentation, please ensure that a co-author registers to attend the Conference and present the paper. To confirm your place in the Conference program, online registration is available through our website: www.business.unsw.edu.au/afbc. You may also follow this direct link to the registration page: <http://www.cvent.com/d/0rqp83> Early Bird Registration Deadline: Thursday 1 October 2015. Registration Deadline for Accepted Papers: Friday 23 October 2015.

Please ensure that you complete your registration by the early bird deadline should you wish to benefit from our reduced rates. If you have not registered for the Conference by Friday 23 October 2015, your paper will not be included in the Conference program. Information about your session and guidelines for the preparation of the final presentation will be sent to you via email and/or SSRN in November, if you have registered for the Conference. We will also provide you with the name and email address of the discussant assigned to your paper so that you can send the latest version of your paper to them. Please note that the registration desk at the Conference will be open at 8:00 am on Wednesday 16.

If you have further queries about the Conference, please do not hesitate to contact the Conference Administrator at bankconf@unsw.edu.au. Thank you for your interest in the Conference. I look forward to seeing you in Sydney.

Yours sincerely,

Fariborz Moshirian

Conference ConvenorPh: + 62 21 4750321, Fax: + 62 21 4722371, Email: irvan@stei.ac.id
Website: <http://icbess.stei.ac.id>

APPENDIX B: OFFICIAL ACCEPTANCE LETTER OF *INTERNATIONAL JOURNAL OF BUSINESS RESEARCH*



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Date: «November 30, 2016»

IJBR

To: Ameha Tefera Tessema, Jan Walter Kruger

Re: Your Paper:

A METHODOLOGY TO TEST VIABILITY OF AN INTEREST RATE COMMISSION AGENT BANKING SYSTEM (AIRCABS)

Congratulations! On conclusion of the double-blind review process, your paper is accepted for publication in *International Journal of Business Research*® (IJBR). The IJBR is a refereed publication of the International Academy of Business and Economics. IJBR is Trademark of the IABE.

Online Registration: Please complete your registration online at www.iabe.org. During online registration process, you can pay your applicable fees, upload formatted paper, and **join the IABE as a Full Professional Member**. You may also complete your registration by email using info available online.

REGISTRATION DEADLINE:

Please complete your registration **BY DECEMBER 12, 2016**. Accepted paper submitted late or in non-conforming format or without full amount of applicable fees may not be published.

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Please feel free to contact me at admin@iabe.org , mgavriletea@yahoo.com

Best Regards,

Marius Gavriltea

Marius Gavriltea Ph.D.

IABE Vice President



**APPENDIX B1: OFFICIAL ACCEPTANCE LETTER OF 8TH INTERNATIONAL
CONFERENCE ON ECONOMICS, FINANCE AND MANAGEMENT OUTLOOK**



Date:27-09-2016

Paper Number: 8th_ICEFMO-504

Language of Conference: English

Dear Ameha Tefera Tessema

We are pleased to inform you that your paper entitled “**A Methodology To Test Viability of An Interest Rate Commission Agent Banking System (AIRCABS)**” is accepted for oral presentation in *8th International Conference on Economics, Finance and Management Outlooks*, 12-13 November, 2016, Singapore. Your paper was evaluated in a double-blind review process. We invite you to present your full research paper in the conference.

Your paper will be included in the conference proceeding which will be published with an ISBN in a CD form and online publication on the website.

As a speaker in the conference you are required to send us the followings:

- Your PowerPoint presentation before 5 November, 2016
- Please register and send us the scan copy of payment proof as soon as possible

The time for each presentation is 15 minutes. Our conference will provide you a forum to share your specialized research with international colleagues.

Please quote your paper number for all future correspondences with us. We look forward to seeing you at the conference.

With best regards,

Dr. Qazi Muhammad Adnan Hye

Conference Coordinator

22 Sin Ming Lane #06-76, Midview City

Singapore 573969, Singapore

URL:<http://asianrdw.org/?ic=details&id=27>

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APPENDIX B2: OFFICIAL ACCEPTANCE LETTER OF INTERNATIONAL JOURNAL OF ECONOMICS PERSPECTIVE

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Tel: +90 542 852 4904

Fax: +90 392 630 2032

To: Ameha Tefera TESSEMA, PhD

School of Business Leadership

University of South Africa

South Africa

Dear Dr. Ameha Tefera TESSEMA,

Your article (A Methodology to Test Viability of An Interest Rate Commission Agent

Banking System (AIRCABS)), which was submitted to the International Journal of Economic Perspectives (IJEP, ISSN: 1307-1637) has been accepted as suggested by our reviewers and will be published in Volume 11, Issue 2 in June 2017.

IJEP is now indexed/abstracted in ABI/INFORM, Australian Business Deans Council (ABDC)'s Journals' Rating List, CABELL's Directory of Publishing Opportunities in Economics and Finance, EBSCO, ECONLIT, e-JEL, JEL on CD, Elsevier Bibliographic Databases, SCOPUS, Ulrich's Periodicals Directory, and World Banking Abstracts.

Application to Social Science Citation Index will be done very soon; thus, more indexed/ abstracting information will be provided soon.

We would like to take this opportunity to thank for your scholarly contribution to our journal with a nice piece of work and look forward to hearing from your further contributions.

Yours Truly,

Prof. Dr. Salih KATIRCIOGLU

The Editor

International Journal of Economic Perspectives

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APPENDIX C: OFFICIAL ACCEPTANCE LETTER OF JOURNAL OF BANKS AND BANK SYSTEM



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June 13, 2017

Ameha Tefera Tessema

Doctor of Business Leadership candidate, School of Business Leadership, University of South Africa

E-mail address: ambet22002@yahoo.com

ACCEPTANCE LETTER

Dear Ameha Tefera Tessema,

We are very pleased to inform you that your paper titled “**Testing Performance of An Interest Rate Commission Agent Banking system (AIRCABS)**” co-authored with Prof. Jan Walters Kruger has been accepted and will be published in the international journal “Banks and Bank Systems” (BBS). It will be published in the Volume 12, Issue 3, 2017.

The articles have been peer-reviewed by the Editorial Board of “Banks and Bank Systems” journal, which is a double blind peer reviewed academic journal since 2006 (the year of journal establishing), and publishes high quality research papers.



Best regards,

Liudmyla Ostapenko

Director

LLC “Consulting Publishing Company

“Business Perspectives”

E-mail: head@businessperspectives.org

**APPENDIX D: OFFICIAL ACCEPTANCE LETTER OF INTERNATIONAL JOURNAL OF
ECONOMICS AND FINANCIAL ISSUE**



<http://www.econjournals.com>

International Journal of Economics and Financial Issues (IJEFI)

Date: July 13, 2017

MN: IJEFI 2017-5039

Title: An Improvement on An Interest Rate Commission Agent Banking System (AIRCABS MODEL)

To: Ameha Tefera Tessema

School of Business Leadership, University of South Africa.

Thank you for your interest in publishing in International Journal of Economics and Financial Issues. I am pleased to confirm that your paper “**An Improvement on An Interest Rate Commission Agent Banking System (AIRCABS MODEL)**” has been accepted for publication in our journal. Your paper has been scheduled for publication in Vol 7, No 4, 2017 issue (July 2017).

With kind regards,

ilhan Ozturk
EconJournals
Dr. İlhan ÖZTÜRK
Editör

Ilhan OZTURK, Ph.D.

Editor, International Journal of Economics and Financial Issues (IJEFI)

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<http://www.econjournals.com/index.php/ijefi>

APPENDIX D1: REVIEW RESULT OF INTERNATIONAL JOURNAL OF ECONOMICS AND FINANCIAL ISSUE



<http://www.econjournals.com>

International Journal of Economics and Financial Issues (IJEFI)

Date: July 11, 2017

MN. IJEFI 2017-5039

An Improvement on An Interest Rate Commission Agent Banking System (AIRCABS MODEL)

In this paper the author(s) try to test an interest rate commission agent banking model's viability and reliability. An interest rate commission agent banking system (AIRCABS) increased the investor loan funding agent bank's profitability and sustainability by shifting credit risk and liquidity crunch to investors and entrepreneurs. The bank increases stable deposit by applying discrete market deposit interest rate incentive into depositors' accounts and by letting depositors latter to shift to investor position having the bank as an agent to collect proportionate credit price instead of deposit interest rate on the portion of the fund the bank has already invested. Therefore, an interest rate commission agent bank found viable and reliable.

The paper looks competently carried out. In my opinion it is an interesting and educative paper. Literature review, methodology and results are presented in good structure.

Based on the comments above, I suggest that the paper should be accepted for publication in International Journal of Economics and Financial Issues.



Prof. Dr. Ilhan OZTURK

Ilhan OZTURK, Ph.D.

Editor, International Journal of Economics and Financial Issues (IJEFI)

Email: ijeifi@econjournals.com

<http://www.econjournals.com/index.php/ijeifi>

APPENDIX E: SAMPLED BANKS' BRANCHES IN ADDIS ABABA, ETHIOPIA

Table1: Branches and capital of banks in Ethiopia

	Branch Network in number as of March 31/2016				Capital in millions of blrirs As of March 31/2016		Samples	
	In Addis Ababa	Out of Addis Ababa Region	Total branch	Market share in %	Capital	Market share in %	Sampled branches from Addis Ababa	
Banks							Sample %	Sampled unit
1. Public banks	a	b	c=a+b	d=c/2972	e	f=e/40169.80	g=(a/1000)x100	h=gx300
Commercial Bank of Ethiopia	207	825	1032	34.7	12903.1	32.12	21	63
Construction and business	52	70	122	4.1	773.8	1.93		
Development Bank of Ethiopia	1	31	32	1.1	7500	18.67		
Total public banks	260	926	1186	39.9	21,176.9	52.72		
2 Private banks								

Awash International Bank	123	111	234	7.9	2650.60	6.6	12	36
Dashen Bank	90	78	168	5.7	2377.10	5.92	9	27
Abyssinia Bank	85	82	167	5.6	1607.20	4	8.5	26
Wegagen Bank	63	85	148	5.0	2421.10	6.03	6.3	19
United Bank	68	64	132	4.4	1502.6	3.74	6.8	20
Nib International Bank	75	54	129	4.3	1927.20	4.80	7.5	23
Cooperative Bank of Oromia	41	123	164	5.5	1140	2.84	4.1	12
Lion International Bank	43	70	113	3.8	683.10	1.70	4.3	13
Oromia International	55	127	182	6.10	848.40	2.11	5.5	17
Zemen Bank	3	8	11	0.37	650.00	1.62	0.3	0
Buna International Bank	43	49	92	3.10	606.60	1.51	4.3	13
Berhan International	42	36	78	2.62	698.40	1.74	4.2	13

	Abay Bank	22	74	96	3.23	723.70	1.80	2.2	7
	Addis International Bank	22	12	34	1.14	446.70	1.11	2.2	7
	Debub Global bank	9	15	24	0.81	240.80	0.60	0.9	2
	Enat Bank S.c	9	5	14	0.47	469.10	1.16	0.9	2
	Total private	793	993	1785	60.1	18,992.90	47.28		
3	Grand total	1053	1919	2972	100	40169.80	100	1	300

- Source: National bank of Ethiopia quarterly Bulletin as of March 31/2016 and own calculation

APPENDIX F: THE RESEARCH STUDY SURVEY QUESTIONNAIRES

Informed consent for participation in an academic research project

An interest rate commission agent banking system

Dear Respondent

You are herewith invited to participate in an academic research study conducted by AmehaTeferaTessema, a student in the Doctor of Business Leadership at UNISA's Graduate School of Business Leadership (SBL).

The purpose of the study is to investigate

- I. the impact of financial crisis emanates from credit risk and liquidity crunch on an interest rate commission agent banking system in administrating investor loan funding to entrepreneur.
- II. the impact of investor loan funding on profitability and sustainability of an interest rate commission agent bank
- III. the impact of discrete market deposit interest incentive on stable deposit mobilization of an interest rate commission agent banking system

All your answers will be treated as confidential, and you will not be identified in any of the research reports emanating from this research.

Your participation in this study is very important to us. You may, however, choose not to participate and you may also withdraw from the study at any time without any negative consequences.

Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 15 minutes of your time.

The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.

Please contact my supervisor, Krugejw@unisa.ac.za, if you have any questions or comments regarding the study. Please sign below to indicate your willingness to participate in the study.

Yours sincerely

Ameha Tefera Tessema

I, _____, herewith give my consent to participate in the study. I have read the letter and understand my rights with regard to participating in the research.

Respondent's signature

Date

Terms definition:

An Interest Rate Commission Agent Banking System: is a system to be adopted by bank to be an agent for investors' loan funding to entrepreneurs by getting the fund seller and buyer agreement to administer the loan after disbursement by retaining reasonable interest rate commission from the agreed investor's loan funding credit price.

Investor: is a lender to entrepreneur/borrower with or without collateral to collect later the fund disbursed and credit price through repayment using the bank as an agent. An investor can be money depositors, who opened deposit account for purpose of receiving deposit interest rate and seeking safety place, who later shift partial or full deposited fund for loan to borrower to get credit price instead of deposit interest rate.

Entrepreneur: is a borrower from investor/depositors through an agent bank which will not hold disbursed loan as an asset by collecting agreed percentage commission from credit price up to loan settlement.

Section one: Demography Question

Instruction: Please kindly fill out each question by putting a tick mark (✓)

1. Gender: Male____ Female____

2. Age group: 18-30__ 31-40____ 41-50____ 50-60____ over 61____

3. Position at your bank (fill your own department & underline your position) _____
officer/manager/ /expert/vice-president/president

4. Total experiences: 1-10____ 11-20____ 21-30____ more than 30____

5. Your current level of education: Bachelor's degree____ Master's degree____ Doctoral degree____ please specify other____

6. Please indicate your special expertise_____

Section Two: credit risk and Liquidity Crunch

Please rate the extent to which you agree or disagree with statement about liquidity crunch by putting a tick (√) on one of the following: Strongly agree=5, Agree=4, Natural=3, Disagree=2, strongly Disagree=1

7	Credit risk and liquidity crunch	Responses				
		1	2	3	4	5
7.1	Decrement of bank's loan growth and capital is sign of liquidity crunch					
7.2	Bank lending practices that lead borrower more vulnerable to abusive practice enhances liquidity crunch.					
7.3	The bank that involved in high level of interest income exposed to liquidity crunch					
7.4	The misjudgement of bank's loan and deposit mobilization strategy increases the bank liquidity risk.					
7.5	Bank failures sourced from effect of deposit run.					
7.6	High illiquid asset that is unaccepted for common valuation in market is the source liquidity risk					
7.7	Instability of depositors led the bank to liquidity risk					
7.8	Diversifying loan funded by bank out of intended purpose led the borrower to defaulter					
7.9	Funding loan by bank to entrepreneur as own asset increases the bank's credit risk					
7.10	Credit operation weakness of a borrower leads the loan to default					
7.11	Loan sanctioned by corruption lead borrower to default					
7.12	Lack of good credit assessment and follow up by bank lead to increase nonperforming asset					

- 7.13 Borrowers default for lack of management support from lending organ
- 7.14 Buying and selling of money exposed the bank to credit risk
- 7.15 Decline of commodity prices for exporters, who used bank loan facility, can result in higher nonperforming loans (NPLs)
- 7.16 As capital adequacy increases credit risk of the bank decreases

Section Three: Investor Loan funding

Please rate the extent to which you agree or disagree with statement about Investor loan funding by putting a tick (✓) on one of the following:

Strongly agree=1 disagree=0

8 Investor loan funding	Responses
	0 1
8.1 Investor Loan funding increase the agent bank's profitability in broad sample base	
8.2 Investor's loan funding enhances the bank liquidity and efficiency	
8.3 investor loan funding can enhance the bank's loan administrative efficiency and capacity	
8.4 Funding loan by investor to entrepreneur through an interest rate commission agent bank eliminates the bank exposure to credit risk and liquidity crunch	
8.5 As the supply of loan funding by investor to entrepreneur increases through an interest rate commission agent bank, investment in a country enhances and thereby increases the country GDP	
8.6 Benefiting credit price to investor loan funding enhances the agent bank interest rate commission	

Section Four: Discrete market deposit interest incentive

Please rate the extent to which you agree or disagree with statement about discrete market deposit interest **incentive** by putting a tick (✓) on one of the following:

Strongly Agree=1 Disagree=0

9	Discrete market deposit interest incentive	Responses	
		0	1
9.1	The increase of deposit interest rate increases the demand of depositor.		
9.2	Applying discrete market interest rate incentive for those deposits' volume increases monthly, the demand of depositor to keep their deposit stable increases		
9.3	Applying various level deposit interest rate incentive for depositors enable the bank to get more stable deposit		
9.4	Allowing depositor to participate in bank's investment business by paying proportionate credit price for their partial or full fund enables the bank to have more stable fund.		
9.5	Interest incentive on deposit in terms of incentive in kind enables the bank to hold more clientele.		

Section Five: An interest rate commission agent banking system (AIRCABS)

Please rate the extent to which you agree or disagree with statement about an interest rate commission agent banking system (AIRCABS) by putting a tick (✓) on one of the following:

Strongly agree=5, Agree=4, Natural=3, Disagree=2, strongly disagree=1

10	An interest rate commission agent banking system (AIRCABS)	Responses				
		1	2	3	4	5
10.1	The bank's buying and selling of fund deprived the depositor's to get credit price					
10.2	As deposit and credit interest rate approach equilibrium point the bank shall work as an interest rate commission agent for investor loan funding to entrepreneur to enhance its sustainability in market					
10.3	Providing alternative investment opportunity to fund provider by AIRCABS enable to enhance stable fund in the bank.					

- 10.4 Providing high deposit interest rate and credit price by AIRCABS enable the bank to attract funds from the unbanked and banked society
- 10.5 Administering investor loan funding through AIRCABS enable to eradicates liquidity crunch
- 10.6 Bank can transfer credit risk using AIRCABS to the fund holder and investor to increase its profitability and sustainability
- 10.7 AIRCABS enables the fund owner to search potential borrowers with or without collateral in the market to provide a credit facility using the bank as an agent
- 10.8 The right of investors and depositors to get their fund return will be safely kept by the bank using AIRCABS
- 10.9 Under AIRCABS the bank's profit will be simply maximized without financial expense

Please put your general comments and recommendations on application and benefits of bank business model: An Interest Rate Commission Agent Banking System:

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Thanks!

I am grateful for your invaluable devotion to fill out this survey questionnaire

APPENDIX G: ACCOUNTING ENTRIES

I. Accounting entries for account opening by investor and entrepreneur

a) Account opening by investor

Dr (cash)

Cr (investor's account)

b) Accounting opening by entrepreneur

Dr (cash)

Cr (entrepreneur's account)

II. Loan disbursement entries

Accounting entries while loan disbursement mad by agent bank

a) On the liability side of the agent bank's balance sheet

Dr (investor loan funding deposit account)

Cr (entrepreneur account)

b) Transaction recording on the off-balance sheet while loan disbursement is effected

Dr (entrepreneur loan ledger)

Cr (payable investor loan ledger)

III. Loan repayment transaction entries

Accounting entries passed while loan repayment effected

a) Loan transaction effect on balance sheet of the agent bank

Dr (cash-total interest and principal payment of loan)

Cr (partial interest rate income and principal payment into investor account)

Cr (interest rate commission into bank income account)

b) Loan transaction effected on the off-balance sheet of the agent bank while repayment is made by the entrepreneur

Dr (payable investor loan ledger by total repayment)

Cr (entrepreneur loan ledger-clear the principal by excess above the accrued interest balance)